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LECTURE I.

THE PLAN OF THE AUTONOMIC NERVOUS SYSTEM AND ITS EMOTIONAL RESPONSE.

MR. PRESIDENT, FELLOWS, LADIES, AND GENTLEMEN,—I imagine that most holders of the high office to which you have called me approach their task with mingled gratitude and trepidation; certainly I do. Whatever ambitions I may have had, I never anticipated I should be Croonian lecturer, and for this signal and most unexpected honour I tender my sincere thanks. But, if at any time I should have felt the responsibility of following, even by a long interval, my distinguished predecessors in this office, I feel it doubly now, when the pressure of military and other duties has rendered laboratory work impossible, and quiet thought most difficult. I must crave your indulgence for shortcomings, which will be as obvious to you by the time I have finished as they are to me now.

A TRIBUTE TO GASKELL.

In choosing as my subject "The Rôle of the Sympathetic Nervous System in Disease," I have been influenced by two main considerations. Firstly, more than a quarter of a century ago I came under the teaching of Gaskell, one of the greatest minds that have ever adorned British physiology. Secondly, although an entire generation has passed away since his work on the Visceral Nervous System was published, it is only quite recently that the clinical bearing of his generalisations has been appreciated, chiefly owing to the writings of Cannon and of Crile in America.

It is, therefore, of the nature of a tribute to the memory of my great teacher that I now attempt to summarise certain applications of his ideas which coloured my thoughts as a student to the clinical problems which confront us in daily work. He wrought better than he knew. Interested only in elucidating the facts, without troubling himself as to their practical bearing, to-day we are realising how much we are beholden to him for the explanation of many clinical phenomena, some of which have required the shock, the stimulation, and the exhaustion of a great war to enforce upon our notice.

To read an account of the sympathetic nervous system before Gaskell is like reading a description of the circulation before Harvey. Just as even the course of the blood was in doubt till Harvey elucidated it, so even the direction of the impulses in the sympathetic chain was uncertain till Gaskell made it clear. It is not depreciating the work of subsequent investigators in both fields to say that they have chiefly filled in the gaps and completed the details in the great plan drawn up by these masters. And while saying this I yield to none in my admiration of the beautiful and accurate investigations of Langley.

THE PLAN OF THE AUTONOMIC NERVOUS SYSTEM.

Gaskell first showed that the nerve fibres which flowed from the spinal cord into the sympathetic chain were of a smaller calibre than the nerves to the skeletal muscles. Adopting this as a standard, he was able to show that there were fibres with visceral functions in the cranial and the sacral nerves. Such fibres subserve the functions of organic life and are not under the control of the will.

Various names have been suggested to include all such visceral fibres. The term "autonomic nervous system," introduced by Langley, has, perhaps, met with the most general acceptance. It will, therefore, be convenient to classify the whole of the visceral or involuntary nervous system as follows.

Autonomic Nervous System.

1. Sympathetic (thoracico-lumbar outflow).
2. Para-sympathetic:
   (*a*) Cranial outflow.
   (*b*) Sacral outflow.

These three groups of fibres are separated by the cervical and lumbar enlargement of the cord, which are devoted to the innervation of the somatic muscles of the limbs. So much have these areas become specialised for this purpose that the limbs have to obtain their visceral fibres from the part of the cord which lies between them.

Arrangement of the Sympathetic Nervous System.

The essential parts concerned in a reflex action are the receptor and excitor elements. The former consists of an afferent fibre with its nerve cell and an afferent root ending in the cord against another neuron. I do not propose to deal with the receptor elements in the autonomic reflex, but must recall, even in passing, that they were the subject of the first clinical applications of Gaskell's views in the admirable researches of James Mackenzie and of Head on referred visceral pain.

On the efferent side is the excitor element, consisting of the nerve cell in the anterior horn of the spinal cord, with its axon distributed to the muscle. Now, certainly in most cases, probably in all, the receptor element does not connect directly with the excitor, but there is an intermediate neuron, bringing the two into relationship. For this Gaskell suggested the name "connector element." The connectors need not simply associate receptors and excitors of somatic nerves in the same level of the cord; they may run up and down in longitudinal tracts, bringing neurons of different levels into relationship.

Now, in the autonomic system, the outflow of small medullated fibres represents the connector element, while a cell in the sympathetic ganglion, with its axon, represents the excitor element. For, as Langley showed by his nicotine method, every one of these small medullated fibres ends round cells in one or more sympathetic ganglia, whence a new non-medullated fibre passes to its ultimate destination. Hence there is a connector pre-ganglionic medullated fibre and an excitor post-ganglionic non-medullated fibre.

Just as the connector element of somatic nerves may run longitudinally in the spinal cord, so the connector element of visceral nerves may run longitudinally in the sympathetic chain. Just as in the process of evolution the receptor cells have been withdrawn from the periphery into close proximity to the spinal cord, so the excitor cells of visceral elements have migrated out from the cord into outlying ganglia. As Bayliss puts it:

"Whereas the somatic nerves are formed by *axons* growing out from cells in the central nervous system, the autonomic system is formed by chains of *cells* growing out from the same system and forming axons subsequently."

When we come to inquire what is the purpose of this different arrangement in the two systems, we find the answer in the different functions performed by them. The somatic nerves are for localised accurate reflexes, the visceral nerves are for widespread diffuse effects. The secret of the arrangement of the sympathetic nervous system is its adaptation to produce as easily and as speedily as possible generalised effects.

Path of Sympathetic Outflow.

We must consider next, more precisely, how the sympathetic outflow reaches it destination. The fine medullated pre-ganglionic connector fibre springs from a cell in the lateral horn; it passes out in the anterior root, which it leaves by a white ramus communicans, to enter the sympathetic chain. It ends by forming synapses round cells in the lateral or in the more outlying sympathetic ganglia, such as the superior cervical and mesenteric ganglia. In this way a single connector fibre may stimulate a number of cells. From these cells start the non-medullated post-ganglionic excitor fibres, which pass to their destination, mainly along blood-vessels, to the deeper parts and along spinal nerves to the more superficial parts, being distributed to the latter by the grey rami communicantes.

This plan allows a wide radiation of sympathetic impulses, as was well shown by Langley in the case of the sympathetic fibres which erect hairs, the pilo-motor fibres. On stimulating a single grey ramus the hairs will only erect over a single segmental area, but on stimulating a white ramus erection occurs over a number of areas, usually five or six.

[1] The delay in publishing these lectures has been unavoidable.

The sympathetic ganglia, therefore, act as distributing stations. Although every sympathetic impulse has one cell station outside the cord, no impulse passes through more than one such station; the excitor fibre runs straight to its destination.

The term "made-up spinal nerve" has been applied to the nerve which has shed its connector fibres and has received its quota of post-ganglionic excitor fibres. This make-up really amounts to a re-segmentation of the peripheral impulses. In this way all parts of the body can be supplied with sympathetic fibres, although the original outflow is confined to the area between the limb plexuses.

The Mechanisms for Self-Defence.

When we consider the results of sympathetic stimulation we see that they all serve to activate the body for a struggle and to increase its powers of defence. The pupil dilates to increase perception of light; the heart beats more quickly and more forcibly to supply the muscles with blood; the blood-vessels in the visceral area constrict, raising the blood pressure and driving the blood from the digestive area, whose functions are simultaneously inhibited, into the skeletal and cardiac muscles, the lungs, and the brain. The sweat glands are stimulated to cool the body heated by its excessive muscular effort, and the hairs are erected, in many animals, to render them more alarming.

As Crile says, "The mechanisms for self-defence which we now possess were developed in the course of vast periods of time, through innumerable intermediate stages, from those possessed by the lowest forms of life. One would suppose, therefore, that we must now be in possession of mechanisms which still discharge energy on adequate stimulation, but which are not suited to our present needs." The pilo-motor fibres are an example of this, for however useful the erection of hairs may be to a cat confronted by a dog the "goose-skin" experienced by man under emotional stress can serve no useful purpose. Some emotional responses, like some of our bodily structures, are vestigial remains.

The Para-sympathetic.

On turning to the para-sympathetic we find that there are certain features of general resemblance between it and the sympathetic, with special differences correlated to the functions subserved. They both control functions of organic life and act apart from the will. They are both composed of small medullated connector fibres and conform to the rule that no efferent autonomic impulse runs from the central nervous system to muscle or gland without having a nerve cell on its course. The post-ganglionic fibres do not, in any case, run to other nerve cells of the system, but are distributed direct to the peripheral tissues, branching as they go. But they have their cell station close to their destination, so that their effects are more localised and less widely spread.

The *cranial portion* of the para-sympathetic sends fibres in the third nerve via the ciliary ganglion to constrict the pupil; in the seventh nerve through the chorda tympani via Langley's and the sublingual ganglion to the submaxillary and sublingual glands; and in the ninth nerve through Jacobson's nerve via the otic ganglion to the parotid gland, both these being secretory in function. But the main cranial para-sympathetic nerve is the vagus, which is distributed to the heart and to the alimentary canal with its outgrowths—i.e., lungs, liver, gall-bladder, and pancreas. The cell stations for the cardiac fibres are in the heart itself, and those for the alimentary tract are found in Auerbach's plexus. While motor and secretory to the alimentary tract and its outgrowths it is inhibitory to the heart.

Gaskell was able to show, both by the positive variation in the demarcation current of an injured heart and by the improved conductivity of cardiac muscle which follow vagus stimulation, that its inhibitory action may be looked upon as anabolic. The display of kinetic energy is replaced by the storage of potential energy. And Cannon has extended this by pointing out that the functions of the cranial visceral fibres may all be regarded as anabolic. He says:

"A glance at these various functions of the cranial division reveals at once that they serve for bodily conservation; by narrowing the pupil they shield the retina from excessive light, by slowing the heart-rate they give the cardiac muscle longer periods for rest and invigoration; and by providing for the flow of saliva and gastric juice and by supplying the muscular tone necessary for contraction of the alimentary canal, they prove fundamentally essential to the processes of proper digestion and absorption, by which energy-yielding material is taken into the body and stored. To the cranial division of the visceral nerves, therefore, belongs the quiet service of building up reserves and fortifying the body against times of need and stress."

The *sacral division* of the para-sympathetic consists of the pelvic visceral nerve. It may be regarded, mainly, as a mechanism for emptying. "Like the cranial division, the sacral is engaged in internal service of the body, in the performance of acts leading immediately to greater comfort." (Cannon.)

Antagonistic Action of Sympathetic and Para-sympathetic.

The next generalisation that we owe to Gaskell is, that when the sympathetic and para-sympathetic are distributed to the same structure, the effects are antagonistic. The sympathetic dilates the pupil, and the para-sympathetic contracts it; the sympathetic accelerates the heart, while the para-sympathetic slows it; the sympathetic inhibits the movements of the stomach and bowels, while the para-sympathetic increases them; the sympathetic contracts the exit from the bladder, while the para-sympathetic relaxes it. Sherrington's law of the reciprocal innervation of antagonistic muscles applies, therefore, to the autonomic system also.

In pain, fear, rage, and any intense excitement the sympathetic neurons are brought rapidly into play, and the action of the cranial division of the para-sympathetic is inhibited. In other words, the anabolic activities of the body are in abeyance and the katabolic activities go on unchecked. Potential energy is converted into kinetic and reserves are freely spent. This is comprehensible now that we see these katabolic activities are defensive in origin, and aided the primitive animal in its struggle with its antagonist; and that complex organism the State, when at war, like the individuals of which it is composed, inhibits its anabolic activities, spends its reserves, and brings into play every katabolic activity which can aid it in its struggle for victory.

THE ADRENALS IN RELATION TO THE SYMPATHETIC NERVOUS SYSTEM.

The one exception to the rule that connector fibres are not distributed direct to muscle or gland is the adrenal nerves, which are pre-ganglionic. And, to use a phrase often erroneously employed with tiresome reiteration, this is really an exception which proves the rule; for the chromaffin cells of the adrenal medulla are nervous in origin, and important results follow from this apparent exception.

The Evolution of the Adrenals.

Phylogenetically, embryologically, and functionally the adrenals and the sympathetic are in the closest association. The chromaffin cells appear to originate in the central nervous system, and in the segmented worms they remain there. When, in evolution, the sympathetic cells emigrate from the central nervous system into outlying ganglia they are accompanied by the chromaffin cells.

"In the lowest vertebrate (Ammocœtes) ..... masses of them are still found close against the cells of the posterior root ganglia. ..... As we pass from the lowest to the highest vertebrates the sympathetic cells become more numerous and the chromaffin cells diminish in number, until at last in the Mammalia the sympathetic system is fully developed and the chromaffin system reduced to the cells found in the medulla of the adrenals.[2] The evidence of embryology and comparative anatomy thus points strongly to the conclusion that the sympathetic nervous system arose from nerve cells containing adrenalin ..... and that when these cells left the central nervous system to become peripheral they left not as single cells but as two separate cells, one of which contained all the adrenalin and formed the chromaffin system, and the other the nerve cells of the sympathetic system of the vertebrate." (Gaskell.)

This throws a flood of light on the meaning of the adrenals. It explains why in them alone the connector fibres end and prepares us for Langley's generalisation that the effect of adrenalin on any part is the same as the stimulation of its sympathetic nerve. For the chromaffin cell represents the excitor element.

A distinguished predecessor, Professor Starling, chose for his Croonian lectures "The Chemical Correlation of the Functions of the Body." He showed that the development of a nervous system is a comparatively late event in evolu-

[2] This is not strictly accurate. There are still chromaffin cells in connexion with the lateral sympathetic ganglia in mammals.

tion. The stimuli to which the most primitive forms of life respond are chemical; the nervous system enables very rapid reactions to occur. But where the less sudden responses will suffice the primitive method is retained. The interest deservedly evoked by this hormone theory has, perhaps, tended to obscure the importance of its converse—the influence of the sympathetic in exciting the secretion of the hormones. In the adrenals we have a most interesting example of this correlation of nervous and chemical stimuli. With the development of the sympathetic system the chromaffin cells are reduced in extent and concentrated in position. The sympathetic, as the defensive mechanism of the body, pre-eminently needs the power of rapid response, but the chemical stimulant is still retained. The sympathetic excites a secretion of adrenalin, and adrenalin increases the sensitiveness of the response to the sympathetic. Just as we have *vasa vasorum* and *nervi nervorum*, so we may look upon the relationship of adrenalin to the sympathetic as that of *excitor excitorum*.

Results of Mobilisation of Adrenalin.

Many observers have found an increased amount of adrenalin in the circulation after stimulation of the splanchnic nerves. Elliott showed that if one adrenal is isolated by cutting its splanchnic supply, and the other is stimulated, either electrically or emotionally, adrenalin remains in the isolated gland but is diminished in the other. The proof is therefore complete that stimulation increases the output of adrenalin.

This emptying of the adrenalin reservoirs occurs not only in direct stimulation of the splanchnics and in strong emotions, but also in trauma and acute infections. The wide differences between the various effective stimuli is in itself suggestive. This mobilisation of adrenalin serves a useful purpose in that it lowers the threshold to sympathetic stimuli which, by acceleration and augmentation of the heart-beat, raising blood pressure, altering the distribution of blood, causing sweating, dilating the pupils, and inhibiting digestive activities, aids in defence. But adrenalin appears to have other actions, also obviously advantageous, for it increases the blood-sugar, hastens the clotting of blood, and diminishes muscular fatigue.

Glycosuria: Adrenalin and Hyperglycæmia.

When Blum, in 1901, found that injection of adrenalin would produce glycosuria it was regarded as a toxic action; it was not suspected that this was a pathological exaggeration of a valuable physiological function. Noel Paton and Drummond showed that this glycosuria was associated with hyperglycæmia. I shall discuss the production of this hyperglycæmia in more detail in my third lecture. Here it suffices to point out its defensive value.

Muscle in action can consume three and a half times as much sugar as resting muscle. Schumberg found that the ability of his muscles to do work, as tested by the ergograph, was greater if he drank a sugar solution than if he drank an equally sweet solution of dulcite. As he did not know which solution was given him the influence of suggestion was eliminated. The increased blood-sugar must, therefore, be an advantageous preparation for the muscular efforts necessary in the impending conflict, and it is provided by the sympathetic without calling upon the digestive powers of the body, which are then in abeyance.

In so far as the excess of blood-sugar overflows into the urine it is wasted, but probably, in general, physiological stimulation does not reach this level. That it occasionally does so was shown by Cannon and Fiske, who found that out of 25 members of a Harvard University football squad, 12 had glycosuria immediately after the final and most exciting contest of the season. It is noteworthy that 5 of these men were substitutes not called upon to enter the game.

"Emotion moves us," says Sherrington, "hence the name." But when, under conditions of modern life, emotion is dissociated from the movement it should evoke under more natural conditions, the preparations made for that movement are wasted. It is, therefore, not surprising to find temporary glycosuria more commonly in intense pain and emotional excitement than after strenuous exertion. This is only one example of that dissociation of sympathetic stimulation from the action to which it should be preparatory.

I think this principle explains some of the phenomena of disease, and renders intelligible the fact that worry is more injurious than work. Crile quotes the saying: "When stocks go down in New York, diabetes goes up."

Influence of Adrenalin on Clotting of Blood.

Next, as to the influence of adrenalin in hastening the clotting of blood. Vosburgh and Richards were the first to claim this influence, but it has been denied by Wiggers.

Cannon and Gray investigated this point more carefully in 1914, and concluded that adrenalin usually definitely hastens coagulation. For some time it has been known that exclusion of the liver from the circulation greatly lengthens coagulation time; the liver appears to furnish continuously to the blood a factor in clotting which is continuously destroyed in the body. They suggested that adrenalin may stimulate the liver to discharge this in greater abundance. With Mendenhall, Cannon found that though stimulation of the splanchnic normally hastened clotting, this did not occur in the absence of the adrenals. To avoid the depressing effect of total excision they made use of Elliott's observation that in the cat the splanchnic innervation of the adrenals is uncrossed. One adrenal was removed, and it was found that stimulation of the corresponding splanchnic did not hasten clotting, while stimulation on the intact side did. They also found that central stimulation which would have caused pain in the conscious state increased the speed of clotting in the anæsthetised animal, and that clotting occurred more quickly in the enraged animal.

According to Grabfield,[3] adrenalin acts by increasing the amount of prothrombin in the circulating blood. The conservative value of this sympathetic-adrenalin effect in diminishing loss of blood in a conflict is self-evident.

Adrenalin and Fatigue.

Lastly, among these actions of adrenalin comes its influence on fatigue.

In Oliver and Schafer's original paper on adrenal extract they stated that it improved the height and duration of voluntary muscular contraction in the frog. This seemed to explain the profound atony of the skeletal muscle in Addison's disease, which is not only a familiar clinical observation, but was demonstrated more precisely by Lombard with the ergograph by the rapid development of the fatigue curve in patients suffering from this disease I was, therefore, perplexed by the statement of later observers that adrenalin did not act on structures which had never been innervated by the sympathetic. Some observations certainly suggest a sympathetic influence on the tone of striped muscle, but they are by no means conclusive.

In consequence of this statement, it has usually been assumed that the muscular atony of Addison's disease was due to the low blood pressure, and consequent poor supply of blood to the muscles. To a certain extent this is true, for Grüber showed that increased blood pressure was able to restore normal irritability to fatigued muscle, even when the adrenals had been removed. That this low pressure is partly responsible is easily intelligible, for a good circulation is required to remove those metabolites which are such a powerful factor in inducing fatigue. But Oliver and Schafer's observation was made on excised muscle, where such an explanation would not apply.

It is interesting, therefore, that Grüber found that although adrenalin did not increase the irritability of normal muscle, it promptly lowered the threshold stimulus necessary for fatigued muscle, even when a rise of blood pressure was prevented. The restoration of a fatigued muscle, which is effected by resting for an hour, is accomplished by adrenalin in five minutes.

THE SYMPATHETIC RESPONSE AS AN AID TO DEFENCE.

Cannon, in summing up the results of this interesting series of researches, says:—

"Thus it (adrenalin) plays an essential role in calling forth stored carbohydrate ..... flooding the blood with sugar; it helps in distributing the blood to the heart, lungs, central nervous system, and limbs, while taking it away from the inhibited organs of the abdomen. It quickly abolishes the effect of muscular fatigue and it renders the blood more rapidly coagulable. These remarkable facts are, furthermore, associated with some of the most primitive experiences in the life of higher organisms, experiences common to all, both man and beast, the elementary experiences of pain, fear, and rage, that come suddenly in critical emergencies ..... The most significant feature of these bodily reactions ..... is that they are of the nature of reflexes, they are not willed movements; indeed, they are often distressingly beyond the control of the will."

[3] American Journal of Physiology, 1917, xlii., 46.

Now, one of the features of a reflex is its purposive character. The reflex of a skeletal muscle is not voluntary, but it is purposive, and by its means, for example, our eyes are protected from foreign bodies, and we recover our balance before we are conscious that we have slipped. Just so these emotional reflexes are purposive and defensive, but, as I have already said, they were evolved under conditions which differed from those now existing, so that the reaction sometimes becomes inappropriate.

The Emotions.

If we seek for an explanation of the similarity of the sympathetic response to fear, pain, rage, and other strong emotions, we may find it given admirably by Darwin in his "Expression of the Emotions in Man and Animals":—

"In the agony of pain, almost every muscle is brought into strong action ..... for great pain urges all animals, and has urged them during endless generations, to make the most various and diversified efforts to escape from the cause of suffering. ..... A man or animal driven through terror to desperation is endowed with wonderful strength, and is notoriously dangerous to the highest degree."

And again:—

"Men through numberless generations have endeavoured to escape from their enemies or danger by headlong flight or by violently struggling with them, and such great exertions will have caused the heart to beat rapidly, the breathing to be hurried, the chest to heave, and the nostrils to be dilated. As these exertions have often been prolonged to the last extremity, the final result will have been utter prostration, pallor, perspiration, trembling of all muscles, or their complete relaxation. And now whenever the emotion of fear is strongly felt, though it may not lead to any exertion, the same results tend to reappear, through the force of inheritance and association."

The Response to Fear.

Crile illustrates this by a modern instance and a modern simile:—

"And now, though sitting at his desk in command of the complicated machinery of civilisation, when he fears a business catastrophe his fear is manifested in the terms of his ancestral physical battle in the struggle for existence. He cannot fear intellectually, he cannot fear dispassionately; he fears will all his organs, and the same organs are stimulated and inhibited as if it were a physical battle with teeth and claws. ..... Nature has the one means of response to fear, and, whatever its cause, the phenomena are always the same, always physical."

"Under modern conditions of life neither fight or flight is *de rigueur*. The individual under the stimulation of fear may be likened to an automobile with the clutch thrown out, but whose engine is racing at full speed. The petrol is being consumed, the machinery is being worn, but the machine as a whole does not move, though the powers of its engine may cause it to tremble."

Macdougall gives us another reason for this similarity of response of the sympathetic to different emotions when he points out how all instinctive impulses when met with opposition give rise to, or are complicated by, the combative instinct directed against the source of opposition. The dog threatened with the loss of the bone he is eating, the conflict of the males for the possession of a mate, the maternal instinct converted into the anger of combat against an attempt to injure her young, are examples which will occur to the mind at once. There is, indeed, as Cannon says, obvious reason why the visceral changes in fear and rage should not be different, but rather why they should be alike; these emotions accompany organic preparations for action.

Asphyxia.

But we can extend this idea and explain thereby some of the responses of the body to asphyxia, infections, and shock. To take asphyxia first, Why should deep emotion be accompanied by deep respirations?

As emotion is a preparation for movement, we can understand that deep respirations are needed to lower the alveolar content of CO_2 in anticipation of the augmented discharge of CO_2 into the blood which these movements will produce. Sympathetic-adrenalin action also relaxes the bronchial muscles, as is seen when adrenalin is given for asthma, and this facilitates respiratory exchange. But if the emotional response to exertion is inadequate, the exertion itself augments the response, for imperfect oxidation means that lactic acid is produced, which is a further stimulant to the respiratory centre, and hence there is a still greater increase in the respiratory rhythm. If this is still inadequate the onset of asphyxia still further increases the output of adrenalin and shows the characteristic sympathetic effects by raising the blood pressure, exciting sweating and dilatation of the pupils, increasing the blood-sugar, and relaxing the bronchial muscles.

If the response to all this is adequate, respiratory distress abates, and the man gets his "second wind." But if oxidation is still insufficient, the next step is still defensive in character, though a desperate one. The powers of offence are paralysed, while the vital mechanisms are stimulated still further. For, as Crile points out, acidity when carried too far inhibits the functions of the cerebral cortex while stimulating those of the medulla. This antithetic reaction to increased hydrogen-ion concentration is an adaptation to prevent an animal from killing itself by over-exertion, for the mechanisms for initiating a discharge of energy are in the higher centres, while the essential part of the mechanisms for the neutralisation of acid metabolites, the centres governing circulation and respiration, are in the medulla. Clinical equivalents which will readily occur to the mind are the air-hunger in the acidosis which precedes diabetic coma, and uræmic asthma, also due to acidosis, which may anticipate the final coma.

It is clear that the onset of asphyxia is drawing on the final reserves, bringing exhaustion in its train, so that in its final stages we see a reversal of many of the effects above described. There is a complete muscular relaxation, the respiration is slow, the blood pressure, after showing Traube-Hering oscillations, falls, and the heart fails. Asphyxia, through striking at a vital process, may show us the whole series of events of sympathetic-adrenalin excitation and exhaustion within the compass of a few minutes. But we must beware of too facile an interpretation of these facts and avoid forcing them too far into the general picture. There is, for instance, another factor to which I have referred which may be of great importance—the rapid development of acidosis.

Traumatic Shock.

The same caution is needed in the interpretation of traumatic shock. Unfortunately, in the last four years there has been opportunity of observing traumatic shock on a large scale, but, fortunately, the opportunity has been seized. I shall refer to these researches in my last lecture. For the present I want to call attention to the fact that although the body may respond to trauma in the same way as to emotion, as Crile urged, shock may be fully developed before sympathetic-adrenalin exhaustion can have come on. Thus, the amount of adrenalin (Bedford and Jackson) and of sugar (Cannon) may still be high in the blood when shock is profound.

With the reservation, then, that the development of shock is a more complicated matter than mere sympathetic adrenalin stimulation succeeded by exhaustion, we can still agree with Crile that as fear is born in innumerable injuries in the course of evolution, the initial response to trauma and to fear is likely to be similar. Sherrington showed that the shock-producing receptors or noci-ceptors, as he termed them, were most developed in certain regions of the body which, as Crile observes, have been exposed to injury through long periods of time. The abdomen and chest stand first in their facility for causing the discharge of nervous energy—i.e., they stand first in shock production. Then follow the extremities, the neck, and the back. In this connexion it is interesting to note the instinctive effort of an animal to get at the ventral surface of its antagonist; and also that tearing, crushing injuries cause a much greater response than the clean cut of a knife, for these were the injuries to which primeval man was most subjected.

A further interesting point, in confirmation of these views, is that animals with some natural means of protection have few noci-ceptors, show little fear, and suffer but slightly from shock. For instance, the turtle, the porcupine, and the skunk all feel fairly safe, though for different reasons. "It seems more than a coincidence that proneness to fear, distribution of noci-ceptors, and susceptibility to shock go hand-in-hand." (Crile.)

The Infections.

The reaction to infection, similarly, shows in the quickened pulse, the initial shivering, the subsequent sweating, the inhibited digestive processes, and in the

increased katabolism necessitated by fever, the resemblance in the behaviour of the body towards the seen and the unseen antagonist. And Crile extended these superficial points of resemblance when he demonstrated the increased adrenalin content of the blood which followed the injection of the toxins of *Bacillus coli communis*, streptococci, and staphylococci, and even in foreign proteins. Elliott and Tuckett had previously found a marked reduction of chromaffin substances in the adrenals in fatal cases of diphtheria. So that here the excessive secretion is certainly followed by exhaustion. I suggest that in more prolonged infections exhaustion predominates in the fatal issue. In the more acute, shock will be the most important factor.

And I may sum up this part of my subject by saying that as the sympathetic normally acts as a whole and according to a pattern evolved by the most vital necessities, all critical stresses evoke a response on the same general plan. But the body is too complicated a mechanism to break down in only one way, and the initial response will be differentiated and graded to meet varying strains. In this way we may appreciate the importance of the coöperation of the adrenals and the sympathetic without overstating it.

A Diametrically Opposite View.

It is only fair to state that Stewart and Rogoff,[4] in a series of papers, have opposed the whole theory of the emergency action of adrenalin.

In order to prevent the complication arising from the development of pressor substances in shed blood they collected the adrenalin in a pocket of the inferior vena cava, made by tying the vessel above and below the point of entry of the adrenal veins. On releasing the upper ligature the entrance of adrenalin into the general circulation was judged by the resulting dilatation of the pupil and by its effect on segments of uterine and intestinal muscle. The spontaneous discharge of adrenalin into the circulation of cats was found to range within rather narrow limits, and its percentage in the blood to vary inversely with the rate of blood-flow.

The excision of one adrenal and denervation of the other was compatible with the maintenance of normal health, but appeared to stop the discharge of adrenalin completely for as long as five weeks after the operation, although massaging the remaining gland led to renewal of its flow. Peripheral stimulation of the splanchnics always increased the secretion of adrenalin, and they located the centre controlling this secretion in the upper three thoracic segments.

As they found that the section of one splanchnic diminishes the discharge of adrenalin by one half without causing any material fall of blood pressure, they concluded that adrenalin was not an important factor in maintaining this pressure. They were unable to find any increased secretion in asphyxia or ether anæsthesia, or on central stimulation of sensory nerves. They did not think that the emptying of the adrenals when morphia is administered to cats had anything to do with the associated fright, as this occurs in dogs when there are no signs of fright. "Morphia fright" can also be elicited in a cat with one adrenal removed and the other denervated, where no emptying of the gland occurs. When a dog frightens a cat (each with one adrenal nerve supply cut) the amount of adrenalin on both sides remains about the same in each animal, although both show intense excitement. Marked depletion of adrenalin occurred in the innervated glands of animals dying from various infections, in marked contrast to the effect seen when the glands were denervated.

They found hyperglycæmia in asphyxia or anæsthesia when no adrenalin was being secreted because one gland was excised and the other denervated, and that while so-called emotional hyperglycæmia is not a constant or even a common phenomenon in cats, in any case it does not depend upon increased adrenalin output. They concluded that sugar mobilisation is not effected by the agency of adrenalin.

The results, therefore, point to a steady secretion of adrenalin solely under nervous action controlled from a spinal centre, which is not specially brought into play by emotional stresses and physical strains, and do not support the idea of its being essential to the organism. These conclusions are so diametrically opposed to the results of others that it is best simply to state them and to leave the decision to further observation.

[4] Amer. Jour. Physiol., 1917, xliv., 149-543; Jour. Pharmac. and Exp. Therap., 1916, viii., 479; 1917, x., 1, 49; Jour. Exp. Med., 1916, xxiv., 709; 1917, xxvi., 613-637; Proc. Soc. Exp. Biol. and Med., 1916, xii., 186; 1916, xiii., 184; 1917, xiv., 77, 143, 145.

THE SYMPATHETIC NERVOUS SYSTEM AND THE THYROID GLAND.

I must now briefly consider another endocrine gland which has close relations with the sympathetic nervous system. I mean the thyroid, a subject for much uncontrolled speculation, which I will try to avoid.

The point I wish to make is that the thyroid gland, like the adrenal, can be thrown into increased activity by the sympathetic, and in turn increases the response to the sympathetic. McCarrison, whose work has aroused so much interest in the subject, says, "The thyroid gland is to the human body what the draught is to the fire." We may therefore expect that when the defensive mechanisms are called upon, all the bodily activities have to be quickened and the fire must be kept burning brightly, the thyroid gland must be brought into play.

Development and Secretion of the Thyroid Gland.

It develops as a ventral outgrowth from the pharynx, between the first and second branchial clefts. It sometimes retains, in the thyro-glossal duct, vestigial remains of its old connexion with the alimentary tract, and it is probably due to this primitive course of the secretion that it, in contradistinction to other hormones, is so easily absorbed when given by the mouth. Like other outgrowths of the alimentary tract, it has both a sympathetic and para-sympathetic nerve-supply, the former being derived from the superior cervical ganglion, the latter reaching it through the superior and inferior laryngeal branches of the vagus.

In a gland which has so profoundly an accelerating katabolic action we should expect to find that the sympathetic supply carried the chief secretory nerves. That this is so was proved by Cannon, who joined the central end of the phrenic to the peripheral end of the cervical sympathetic nerve on one side in the cat, so that the gland was stimulated with every breath. This resulted in tachycardia, increased excitability, loose motions, exophthalmos on the side of the operation, a great increase in metabolism, and in some cases in an increased size of the adrenals.

The fresh secretion of the gland is quite fluid or only slightly gelatinous, and it is in this form that it reaches the circulation. The colloid in the vesicles may be looked upon as a reserve of iodine for the body. In the resting stage the vesicles are distended with colloid and their lining cells are flattened. In the active stage there is little colloid and the cells are cuboidal or even columnar. The resting stage can be produced by giving iodine or iodine-containing foods. The discharge of colloid can be effected by a meat diet which is poor in iodine (Chalmers Watson). According to the recent observations of Kendall, the active constituent of the secretion is an indol compound of iodine, which he calls "alpha-iodine." It is a suggestive fact that indol is a putrefactive decomposition product of the tryptophane in the protein molecule.

Thyroid Enlargement.

This emergency ration is drawn upon at puberty, marriage, and pregnancy, while the gland shows retrogressive changes at the climacteric. The close functional association between the thyroid gland and reproduction has long been known, and makes specially interesting Gaskell's observation on the even closer structural association between the thyroid and the gonads in the primitive vertebrate.

McCarrison has also laid special stress on the demand made on the thyroid by infections and intoxications, while Crile has emphasised the influence of the emotions in the same direction. Sometimes this process goes beyond the limits of physiological demands, so that pathological changes ensue. The frequency of some degree of parenchymatous goitre in anæmic girls at puberty is recognised. At Queen Charlotte's Hospital 50 per cent. of pregnant women were noted to have slight enlargement, and it was specially noteworthy in primiparæ.

Though McCarrison may have exaggerated the share played by intestinal toxæmia in thyroid enlargements, we must not ignore the important experimental results he has obtained in inducing such enlargement by fæcal flora, and I think we may accept his three principal conclusions as to the genesis and course of thyroid enlargements (apart from neoplasms): 1. They are all due to psychic, nutritional, or toxic factors, acting singly, or more commonly in combination. 2. In all the pathological process is essentially the same:

greater or less degrees of hyperplasia, followed by greater or less degree of fibrosis and atrophy. 3. In all there is an alteration in the quantity and quality of the thyroid secretion poured into the blood stream.

Exophthalmic Goitre.

In exophthalmic goitre we have the continued action of some excitant which admits of no period of rest, so that the gland is soon emptied of its colloid reserves, while the secreting structures undergo compensatory hypertrophy. The heightened excitability of the sympathetic nervous system is shown in the exophthalmos, mainly due to contraction of the protrusor bulbi muscle of Müller, the rapid pulse, the sweating, and the diminished secretion of gastric juice. As with adrenal stimulation, we find raised blood sugar, a tendency to glycosuria and to pigmentation of the skin. The stimulation of the whole of the emotional apparatus is so obvious that the aspect has been well compared to a state of continuous fear, as seen in the staring eyes, the downward curve of the mouth, and the tremors.

There is a remarkable lowering of the brain thresholds to stimuli of all kinds. According to Crile, the response to emotional, infective, and noci-ceptor stimulation are all equally exaggerated, and he describes similar changes in the brain cells produced by Graves's disease, fear, shock, and exhaustion. The continuous action of the sympathetic appears to lead to degenerative changes in the superior cervical ganglion also; for Wilson found hyper-pigmentation, chromatolysis, atrophy, and fibrosis in all of the 31 cases he examined. Probably the over-stimulation leads to an anticipation of those degenerative changes found by Hale White in this ganglion in later life.

Causation of Graves's Disease.

As McCarrison says, the ideal conditions for the development of exophthalmic goitre are provided when all, or at any rate more than one of three, factors—nutritional, psychic, and infectious—are at work, and Crile observes:—

"I have never known a case of Graves's disease to be caused by success or happiness alone, or by hard physical labour unattended by psychic strain, or to be the result of energy voluntarily discharged."

I have been struck, for instance, by the frequency of enlarged thyroids since the air-raids on London began, and others have commented on this to me as the result of their own experience. Since writing the above I see that Beebe[5] has noted the same thing in America among the recruits under training, and observes that after the Kishineff massacres in Russia and after the San Francisco earthquake the same thing occurred. The excitability of the nervous system in the subjects of Graves's disease is further shown by the liability of diabetes, neuroses, and psychoses to occur in the family.

All this is in agreement with views expressed more than 20 years ago by Ord and Hector Mackenzie, who said:—

"The thyroid condition is at any rate not the primary cause of the disease. We conclude that the disease depends on a derangement of the emotional nervous system, together with an altered perverted condition of the thyroid gland, which serves to keep up many of the characteristic symptoms."

We can, however, express it with a little more exactitude now that we appreciate the fact that emotional response is the phylogenetic expression of a defensive response, and that the thyroid is one of the defensive mechanisms of the body. In fact, we have here an example of a vicious circle: the sympathetic stimulating the thyroid and the thyroid increasing the sympathetic response. I would urge, in passing, that it is the establishment of a vicious circle which is the most important agent in nullifying the *vis medicatrix naturæ*.

That this continuous unrest of the thyroid is followed by its exhaustion is not surprising, and it is well recognised that a condition somewhat resembling myxœdema may supervene. More curious are the cases where the thyroid enlargement subsides, but the other signs of sympathetic stimulation continue, the tremors, the tachycardia, the nervousness, and the wasting, of which I have interesting examples at present under observation. The opinion has been expressed that in all cases of Graves's disease the adrenals are also involved, and one may suppose such manifestations can be explained as due to them, even when the thyroid is approaching exhaustion, or acquiring a higher threshold of stimulation.

Incidence of Graves's Disease.

If the thyroid secretion is mainly katabolic, it may be asked why Graves's disease is so much commoner in women than in men, since one regards male metabolism as being the more katabolic. Perhaps we may find a reason when we note that in women the disease is almost confined to the child-bearing period.

Now thyroid secretion, although accelerator to katabolism in adults, has a marked effect on growth. Thus Gudenach caused tadpoles to reach the stage of metamorphosis in 18 days by thyroid feeding, instead of requiring the usual 10 to 12 weeks. McCarrison found that during fœtal life the developing thyroid is peculiarly susceptible to influences which damage the mother's thyroid. The thyroid does not attain to full functional activity until some months after birth. Meanwhile the maternal thyroid continues in a state of heightened activity, which gives thyroid juice to the milk. I have recently seen a recurrence of myxœdema during lactation in a young woman who had sufficiently recovered under treatment to bear a healthy child.

In chlorosis—another disease restricted to the child-bearing period—the essential feature is a pathological exaggeration of the normal heaping-up of nutritive material in the blood for the next generation. In the same way, the greater responsiveness of the female thyroid to nutritional, psychic, or toxic strain, may be a pathological exaggeration of a mechanism designed for the benefit of the next generation. The liability of women to myxœdema about the time of the climacteric is capable of a similar interpretation. In men, neither Graves's disease nor myxœdema shows a striking age-incidence. But I fear I am breaking my resolution against speculation.

PSYCHO-NEUROSES AND PROTECTIVE MIMICRY.

The effect of sympathetic stimulation on the thyroid may persist, therefore, long after the cessation of the stimulus. This is analogous to what is seen in the psycho-neuroses of war. The initial emotional shock need not be followed at once by psycho-neuropathic symptoms. There is usually a latent period. Roussy and Lhermitte[6] say:—

"The soldier, often experiencing the most distressing visceral disturbances from the emotion, reacts, not always voluntarily, but driven by that instinct deeply rooted in us all—that of self-preservation. Shaken by a shell, for example, or hit by bullet fire, the neuropathic subject, nevertheless, has the energy to escape from danger. Far from being glued to the spot, he shelters in a dug-out, a shell-hole, or a trench. It is when removed to calmer surroundings, far away from danger, that the psycho-neuropathic condition comes to light, whether as a contracture, a tremor, or a convulsive fit."

They go on to point out that the third act of the series is the fixation of the emotional reaction, which tends to escape from conscious control and to reach the depths of the unconscious rapidly. It is only by a voluntary effort that he can recall the emotional origin of the condition. The instinct of self-preservation, which restrains the emotional reaction at the time of the shock, tends to persistence of the emotional attitude later.

"It is not a question of malingering—a conscious and deliberate act—but of an automatic, instinctive phenomenon, advantageous to the individual, but troublesome to the community."

This view seems to me worthy of consideration. It brings the psycho-neuroses of war into line with protective mimicry, also not a voluntary but instinctive act.

CONCLUSION.

My main thesis is that the stimulation of the sympathetic and of its coadjutors, the adrenals and thyroid, means the spending of reserves in the supreme struggle for survival. The quickening of all the vital processes may produce, for a time, a feeling of exaltation and well-being. This may be regarded as a physiological justification for Nietsche's injunction to live dangerously. But exhaustion lies in wait if the struggle is unduly prolonged. A vicious circle is the pathological equivalent of a prolonged struggle. Next, under physiological conditions the sympathetic acts as a whole, while one of the phenomena of disease is dissociation.

[5] Medical Record, Feb. 9th, 1918, p. 237.

[6] The Psycho-neuroses of War, xxviii.

Sensory dissociation is seen, for instance, in tabes and syringomyelia. Sympathetic dissociation may play a part in diabetes and in disorders of digestion and circulation. My subsequent lectures will be devoted to a consideration of such questions.

For the present I am content if I have made clear the general plan of the sympathetic and its general action in assisting the struggle for existence. Evolved in a subconscious plane, it remains for ever beyond the control of the will. The higher centres of the brain show their influence on the lower chiefly in the direction of inhibition. The highest organism is the most self-controlled, but the sympathetic cannot be thus controlled. Though we may deaden the emotion, we cannot prevent the response to an emotion once evoked. To regulate this we must trust to reserves, inherited and maintained through generations of stable and equable ancestors. We might modify the dictum that this war will be won by the nation with the strongest nerves, and say it will be won by the nation with the strongest adrenals, for, just as character is revealed in the instinctive response which occurs quicker than thought, so the powers of tenacity and endurance may be foreshadowed in the original emotional response.

WAR NEUROSIS:

A COMPARISON OF EARLY CASES SEEN IN THE FIELD WITH THOSE SEEN AT THE BASE.*

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IN a previous communication to THE LANCET[1] I have indicated the principal methods of treatment which I found useful in dealing with early cases of war neurosis while acting as neurological specialist to the Army of the Somme front. In the great majority of these acute cases the method of *rational persuasion* sufficed to produce a cure if preceded by a thorough physical examination and supported by the arousal of feelings of confidence and enthusiastic expectation of a favourable result. Where earlier emotional shocks and mental conflicts had already weakened the patient's powers of resistance to the stress and strain of war the method of *mental analysis* was found helpful. Finally, in cases showing extensive amnesia, involving dissociation of intensely emotional psychic states, the method of *light hypnosis, under adequate safeguards*, was invariably successful in restoring the lost memories and freeing the patient from subconscious emotional obsession.

My experience with more chronic cases in neurological hospitals in Great Britain has impressed me with the great difference produced by lapse of time in these functional nervous disorders and in their reaction to different forms of treatment. Several of my officer patients in France were again my patients at Craiglockhart, and notes on the further history of many other of my patients of the Somme have come into my hands. It seems, therefore, worth while to attempt a comparison of these earlier and later cases. Their differences help somewhat to explain the differences of opinion held by equally competent observers on diagnosis and treatment.

Returns to Duty in the Field.

As regards the cases seen in the field the percentage of returns to duty varied, as might naturally be expected, according to the nature of the fighting. It was at the time of a push that this percentage became highest. Thus, whereas my average percentage returns over a period of 16 months was 70, at the time of the Cambrai push in November and December, 1917, I was able to return 91 per cent. to duty. This was due to the number of exceptionally light cases that are sent down at the time of a push, to be out of the way. Neurologists in other armies have no doubt obtained equally high percentages.

But these percentage returns to duty are of no help in deciding the relative merits of different methods of treatment, for the simple reason that the *same* method, apparently, was used by all of us with these lighter cases—viz., the method of persuasion. For my own part, at any rate, I reserved the other therapeutic methods mentioned above, almost without exception, for cases whom I intended to send down the line. It is a study of these cases which is the more helpful in contributing to a scientific knowledge of our subject. But first let us consider the various types of psychoneurosis as they arrive in an advanced neurological centre at the time of a push.

Neurological Cases during a Push.

The majority of the nerve cases that came down during the first 48 hours after our tanks and infantry went over at Cambrai in November, 1917, were very light. They were either old cases of "shell shock" who had lost their nerve again at the prospect of being heavily shelled, or else men constitutionally weak of nerve and lacking the power to pull themselves together in the face of an emergency. They came down in lorries as walking cases, and made a sorry show in the reception-room, with their hanging heads and furtive looks. They gave the impression of men who had, at least temporarily, lost their self-respect. Many of them were keeping up, with obvious effort, rhythmical tremors which had no doubt been involuntary and irrepressible some hours before, but were now within the field of voluntary control. By distracting these cases with a rapid sequence of questions as to the origin of their disability, I was able to bring the tremors to an end, and by treatment during the next few days made the cure a permanent one. These men returned to the line within a week. Others suffered also from tachycardia and genuine headache and vertigo, and needed a more prolonged rest in hospital.

On the following days more serious cases began to arrive, many of them stretcher cases. These had been concussed or buried by the explosion of shells quite close to them, and some of them had been rendered unconscious for a longer or shorter period of time. A few were still apparently unconscious of their surroundings, although their minds were probably in a dream state rather than an absolute blank. The following are brief descriptions of a few typical cases:—

Trance-like State: Petrifaction of Terror.

CASE A.—This patient is brought in lying on a stretcher, motionless except for a slow rhythmical rolling of the head from side to side. His eyes are wide open, gazing fixedly in front of him, and following the movements of his head. He makes no response to questions addressed to him, nor do his eyes show any recognition of what is before them. He is apparently both deaf and dumb, but a vibrating tuning-fork held with its base on the mastoid process or on the vertex of his skull arouses slight facial movements signifying discomfort. There is exaggeration of all the tendon reflexes, without ankle clonus, extensor plantar response, or other signs of any organic nervous lesion. This is combined with muscular hypertonus and a tendency to spasticity of all the limb-joints.

Within two days this patient awoke from his trance-like state, with his hearing completely restored, but speaking with a pronounced stammer. He was also able to walk, although rather weak at the knees. After six days' treatment the only symptoms which he continued to display were slight tremulousness, stammering speech, emotional instability, and amnesia for the events of the first few days of his illness. Independent inquiry showed that this case was one of shell concussion with burial.

CASE B.—This patient also lies flat on his back oblivious to his surroundings. But unlike the previous case, his arms are completely flexed at the elbow and his hands clenched level with his shoulders. His whole body is in a state of continual tremor, most pronounced in his arms, and his face wears a fixed stare of horror, with starting eyes, dilated nostrils, the mouth slightly open and the corners drawn outwards. This is the very petrifaction of fright, such as the Greeks knew and portrayed in the Gorgon myth. A night's sleep under the influence of morphia brings him relief from this mental and bodily obsession of terror, and his recovery thereafter is rapid. At the end of a week, under appropriate treatment, he is an apparently normal man again, sleeping well at night, although easily fatigued, but with no clear recollection of the circumstances of his illness.

Although exposed to heavy shell fire, this patient had not been blown up or buried by shell explosions (compare with Case A).

A Walking Case: Deafness, Mutism, and Amnesia.

CASE C.—A walking case this, but unable to speak or hear. He is somewhat lethargic, but on being given pencil and paper writes a description of the origin of his injury. He has complete amnesia for events immediately following upon the shell explosion up to the time when he reached the advanced dressing-post. Slight tremulousness and occasional headaches complete the list of his symptoms.

I place him on a couch and show him written instructions to close his eyes and think of sleep. After an interval of about two minutes I make a sudden noise by banging two books together. His eyelids flicker, and I find that his power of hearing has returned to him. I then proceed to give him suggestions audibly, urging him to continue thinking of sleep, to give himself up to sleep, and saying that I am about to put my hand on his forehead, and that the moment I do so all the events of his accident, which he has forgotten, will return to his mind with hallucinatory vividness. The result is that the moment I touch his forehead he shouts out, using the same words that he did while under fire, and giving evidence of the same emotion of fear that

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* Being the substance of a paper read before the Psychiatrical Section of the Royal Society of Medicine, April 8th, 1919.

[1] THE LANCET, 1918, ii., 197.

he must have experienced at that time. After he has worked off all this emotion I remind him of where he is (in hospital), who is speaking to him (myself), &c., and after giving the suggestion that he will continue to remember everything, I wake him up and find that his main neurotic symptoms—deafness, mutism, and amnesia—have disappeared. I send him back to the ward to have a good sleep. He makes an uninterrupted and complete recovery during the next few days.

Case of Paraplegia.

CASE D.—Suffers from paraplegia, and is convinced that he cannot stand or walk. He says that this came on gradually, after a dump, of which he had partial charge, was blown up by bombs from a German aeroplane. At the moment the bomb exploded he ran for his life, but after a few seconds he found that his knees were giving way under him and he fell. This was the beginning of his paralysis. I find complete loss of cutaneous sensibility over both lower limbs and over the lower part of the abdomen up to about the level of the umbilicus. The patient's cutaneous and tendon reflexes are normal. There is no sphincter trouble. Within two days this patient was walking quite normally after a few lessons from me, during which I dragged him up and down the ward and exhorted him in every way possible to make the requisite effort to walk, telling him with the utmost conviction that this should be possible through his own exertions.

Case of Hallucinations.

CASE E.—This is an officer of the R.A.M.C. whom I had met only a few weeks previously when he was in complete bodily and mental health. A shell falls in his ambulance, near enough to him to knock him off his feet by its concussion, but without depriving him of consciousness. He becomes very tremulous and depressed, and unable to sleep. The following day he finds that he is suffering from combined hallucinations of *sight and touch*. For example, he finds a strange valise in his bedroom and even verifies its existence by going to it and touching it, and yet he learns from an independent source that *there was no valise there at all*. At the time of his entering my ward, a day or two later, he is suffering from acute headaches, and profound depression and anxiety, with no physical signs of nervous injury. This patient was an asylum medical officer in pre-war days—a fact which perhaps explains the form which his nervous symptoms took.

Causation: Dissociation of Psycho-physical Functions.

Treatment, in the form of vigorous counter-suggestion and rational persuasion, was given to all these patients immediately upon their arrival in hospital, and was continued unceasingly during their stay, with the aid of the sister-in-charge. Consequently, in the majority of cases the functional symptoms disappeared or became gradually of less severity right from the beginning. But in a few of the more resistant cases I was able to observe the tendency for more severe symptoms to make their appearance after a "period of meditation," as Charcot called it, and many of the other cases seem to have shown the same "incubation process" during their passage from the line to the neurological centre. It is particularly noticeable in the case of motor symptoms such as paraplegia, hemiplegia, and loss of speech, and these are just the symptoms whose onset seems, at least on a superficial view, to be completely explicable in terms of Babinski's[2] theory of suggestion. The idea of loss of power has been implanted in the patient's mind at the moment of mental confusion and loss of emotional control produced by the shock of the shell explosion, and gradually realises itself during the following few hours or days.

But, as Myers[3] has pointed out, this theory cannot explain the loss of memory which is so frequent a symptom in the war neuroses. Nor does it explain the sudden or gradual onset of vaso-motor and secretory symptoms which unless treated, and too often in spite of treatment, persist for long periods, although there is often no wound present to give one the excuse of classifying them under the heading "reflex nervous disorder." And there is now a large and growing body of scientific opinion which regards these "reflex nervous disorders" as entirely functional in nature and curable by psycho-therapy.

As regards loss of memory, it is a remarkable fact that Babinski does not once mention this symptom in his recent book on hysteria. Had he devoted more attention to it and to other outstanding *psychological* characteristics of functional nervous disorders, his final theory might possibly have been less clear-cut but surely more intellectually satisfying.

Viewed from the psychological point of view, hysterical disorders all fall under one heading, as examples of *dissociation* of psycho-physical functions (walking, speaking, hearing, remembering certain experiences, &c.) following upon a diminution or loss of higher mental control. One school of thought would explain this dissociation as the result of conflict between opposing and incompatible emotional tendencies and as characterised by repression of one of these tendencies. Others consider that a strong emotional shock is capable of bringing it about in those who are hereditarily predisposed, and may even produce it in a normal individual, if sufficiently intense. On the other hand, Babinski holds that "hysterical symptoms and violent emotions are incompatible."[4] It is perfectly true that an intense emotion, such as anger, may overcome a functional dissociation. I have made a functional paraplegic walk by the simple expedient of inducing him to lose his temper with me. But this fact is in no real contradiction with the theory of the emotional origin of the disease, especially if the originating emotion was of such intensity as to produce a state of stupor—a result often observed in this war.

Cases of Delayed Onset of Symptoms.

In my previous article in this journal I have described one case illustrating the delayed onset of symptoms, where preventive psycho-therapeutic measures were not forthcoming. The following two cases illustrate the same phenomenon. The first description is in the patient's own words, given to me at Craiglockhart after he had recovered from his symptoms.

CASE F.—Capt. X, Regular Army, aged 25, suffering from left-sided hemiplegia, including the left eye, writes: "On August 23rd, 1914, we came into action, and on the following day, whilst in a farmhouse, we were heavily shelled, the house being practically knocked to pieces. My recollection of this incident is fairly clear and at the time I noticed that every shell that burst seemed to concuss me at the back of my head near the neck. However, when I got out of this place I noticed nothing further for about *two days*, during which time we had had practically nothing to eat. Then I noticed that a mist was gathering in front of my *left eye* accompanied by a violent headache. The colour of the mist was continually changing and eventually after a lapse of *six or seven days* almost complete blindness set in. Coincident with these headaches and lack of vision a numbness began to settle gradually in my *left side*, a numbness similar to that when one's fingers become bloodless on a very cold day. It occurred first of all in the upper portion of my leg and gradually extended upwards till my left arm was affected, and the lower left side of my face became slightly puffed and sore. Almost immediately after this stage had begun to develop my left side felt as if it were paralysed, locomotion being difficult and painful, and headaches becoming worse and more frequent."

After five months in hospital the anæsthesia and paralysis cleared up, but the headaches continued. The patient went on light duty, but his headaches got worse and he suffered from a complete loss of interest in anything he was doing. In May, 1917, he went to France again, and on Nov. 30th was hit in the finger. This slight wound brought back all his old symptoms, from which he again recovered at Craiglockhart.

CASE G.—Lieutenant Y, Regular Army, aged 23, suffering from right-sided hemiplegia, including the right eye. History of two motor-cycle accidents and one riding accident, prior to service in France; on each occasion patient lost consciousness, in the last accident being kicked on the right side of the head. Eighteen months later he was in the front line in France one morning when he heard the Boche let off a 200 lb. mortar. He saw the thing and was waiting for it to turn to come down before deciding which way to go, when the sun came out from behind a cloud and he lost sight of the bomb. The last thing he remembered was the feeling of having his ribs crushed, a burning light in his eyes, and a crack on the head. He was "laid out" for about five hours, and then got up alone and said nothing about it, because he had no runner with him at the time, and this was against orders. He felt very shaky and had an awful headache, but he stayed in and out of the line for the next ten days, after which he was admitted to hospital. Not until then did the loss of sight and paralysis down the right side occur. It came on quite gradually, together with incessant noises in the head, and pain round the right side of the head. Complete impotence also set in.

This patient came under my care at Craiglockhart two years later, after long leave at home. He enjoyed good health, except that every 7-10 days he had a bad attack of tinnitus, headache, and pain round the right eye. His right leg would feel "numb and heavy" on these occasions or when he became very tired. He continued impotent. Later on improvement occurred in the form of a lengthening of the interval between his attacks of headache and a gradual disappearance of his impotence.

Mental Processes in "Period of Incubation."

In both of these cases commotion rather than emotion seems to have originated the symptoms, although when they were seen by me months later they showed no signs of organic paralysis. In the second case the kick on the right side of the head 18 months before probably determined the side of the hemiplegia; in the first case the weaker half of the body suffered. I could obtain no evidence from these officers of conscious emotion during the "period of incubation."

In cases which I have seen in the field, however, where the patients were just on the point of becoming completely mute or paraplegic and were rescued by psycho-therapy, there was unmistakeable evidence of subconscious obsession by the emotion of fright, shown by their dreams at night and their physical symptoms during the day. Another mute patient had been struggling for several days to keep his voice, but eventually lost it. During this time he was feeling more and more the full psycho-physical effects of

[2] Babinski and Froment: Hysteria or Pithiatism (Eng. trans.), p. 41.
[3] C. S. Myers: THE LANCET, Jan. 11th, 1919.
[4] Babinski and Froment: Ibid., p. 43.

his original emotional shock. I would therefore suggest that in the cases of the two hemiplegic officers the symptoms corresponded to the subconscious development of the emotion of fear which had been denied full outward expression and had been repressed from clear consciousness by the *morale* of the regular soldier. This is not proof I admit, and I merely put it forward as a possible explanation.

It was difficult to obtain conclusive evidence in the field on the nature of the "period of incubation," because one's first duty was to cut it short and to reverse or neutralise the mental processes going on. But my general impression was in favour of Dejerine's view that the interval corresponds to a period of subconscious emotional development and not to the working merely of suggestion.

Amnesia.

In 15 per cent. of all the cases seen by me in the field there was pronounced loss of memory, combined with the different varieties of physical functional symptoms (paralysis, mutism, deafness, contracture, &c.). My method of dealing with these cases was to restore the memory in a state of light hypnosis, taking care to encourage the revival of the emotional elements of the forgotten experience in all their original intensity. The result was that the accompanying physical symptoms disappeared of themselves, with more or less completeness according as the emotional accompaniments of the recalled memories were more or less vividly re-experienced *as a present hallucinatory experience*, without the need of making specific suggestions that they should disappear.

In my previous article I explained this on the theory that the emotional memories were *repressed* memories, and that the physical symptoms were their physical equivalents, the repressed emotion having been "converted" into physical innervations in accordance with Freud's theory of "conversion hysteria." On again reading through all my notes of these cases I feel inclined to suggest another hypothesis for many of the cases—viz., that the reinstatement of intense emotion acted physically in overcoming synaptic resistances in specific parts of the nervous system, and so put the nervous system into normal working order again. The effect is more efficient than that of, e.g., an electric current would be, since it is selective and occurs only in just those parts of the system concerned with the production of the symptoms. (Cf., the McDougall theory of the physiological factors of dissociation and hypnosis.) The theory of abreaction would still apply to the cases where mental conflict and repression of emotional tendencies had taken place at the time of the shock or injury. But in many cases the conditions of the injury appear to have excluded this mechanism.

This modification is one of theory only. In practice I still regard the recall of lost emotional memories with hallucinatory vividness as a most beneficial form of treatment for patients seen shortly after the origination of their symptoms. It redintegrates the mind [5] and by again linking up the physical manifestations of emotion with their psychical counterpart enables the former to come to a natural end when the emotion has been worked off, instead of persisting as the relatively permanent physical manifestations of the neurosis.

Treatment of Amnesia in France and England.

In France I succeeded in clearing up every case of amnesia by means of light hypnosis. Even cases of obviously physical concussion with retrograde amnesia responded to this form of treatment. Thus, an Australian soldier was brought into my ward with complete loss of memory, his field medical card being marked "Identity unknown." By hypnosis I discovered that he had been pushed out of a motor lorry by his irresponsible companions, and rendered unconscious. He was taken to Amiens, where he seemed to recover. Later on he was found wandering and completely unable to give any account of himself. He had previously been exposed to very heavy shelling and was of a typically hysterical mentality.

In England the results were very different. In only a small proportion of cases could I recover lost memories by mild hypnotic means. Like the other neurotic symptoms the amnesia appeared to have become more fixed and intractable. In the few cases where the hypnotic state was induced and lost memories were recalled, it was extremely rare to find the other neurotic symptoms greatly affected thereby. Thus I hypnotised a deaf-mute suffering from extensive amnesia, and eventually recovered all his lost memories, but he remained deaf and dumb throughout this time and eventually recovered speech and hearing in a dream at night! In acute cases near the line such failure never occurred.

What was lacking in my experiences in England was the emotional abreaction, or the recall, with hallucinatory vividness, of the emotional tone of the lost memories. At Craiglockhart I used a modified form of the method with three of the officer patients and succeeded in producing the abreaction. In each of these three cases I had the satisfaction of seeing the physical symptoms—paraplegia of old-standing, with headache, painful contracture of right arm, and very bad stammer, respectively—alter, increase, and then disappear. These three officers all suffered from intractable insomnia. I therefore sent them to sleep at night by means of light hypnosis—twice only—and treated them by means of mental analysis during the day. In two out of the three cases the "emotional upheaval" took place at night, the patients re-experiencing their original shock in all its vividness and the physical symptoms then disappearing. In the third case the abreaction occurred during the day. They all made good recoveries, although they were chronic cases of many months' standing and every other conceivable method had been used with them in vain.

Blood Pressure: Disturbances of Endocrine Glands.

I made measurements of blood pressure in a series of 42 consecutive cases of severe neurosis in the field, using the auscultatory method with a Tycos sphygmomanometer. The frequency distribution of the systolic pressures was as follows:—

Under 110 mm.	110–120	120–130	130–140	140–150	Above 150	Total.
1	4	9	13	9	6	42

It will be seen that more than one-third of the cases had a blood pressure >140 mm., and much more than one half had a blood pressure >130 mm. The normal blood pressure of a healthy man of about 30 years of age is generally given as 120 mm.–130 mm. I correlated these blood pressures with the corresponding pulse-rates and obtained a zero correlation coefficient. These results may possibly indicate a preliminary increase of adrenalin output in some of the severer cases of war neurosis.

In like manner one might infer from the combination of tachycardia with fine tremors of the outstretched hands found in so many cases a disturbance of thyroid secretion. In two or three cases I also noticed a tendency to exophthalmos and thyroid enlargement, but I was surprised at its rarity, in view of the emotional ætiology assigned to it in the text-books.

The importance which Colonel Mott has attributed to disturbances of the endocrine glands in the symptomatology of the war neuroses is likely to be more and more emphatically justified as the results of observations made by different observers in this field of research are accumulated and compared. The same holds good of Mott's views with regard to the rôle played by the physical manifestations of the emotions in determining the form which the war neuroses take. The far-reaching extent of the bodily changes, involving cardio-vascular and glandular activity in addition to that of the voluntary and involuntary musculature, explains the intractableness of so many of these cases, to which the diagnosis of hysteria in its ordinary sense would hardly apply. Nevertheless, if the originating cause was a mental disturbance, we may theoretically expect that psychotherapy may help to readjust the balance once more even in such widespread physiological disturbances, and practical success, although slow and partial in many cases, seems to justify this expectation.

After-histories of Patients Treated in the Field.

I have a series of 22 completed after-histories of patients treated by me in France. I had used light hypnosis with all these cases, which were severe, and cleared up their amnesias and other pronounced hysterical symptoms (mutism, paralysis, spasmodic contractures, &c.) by this means. In only one of these cases did relapse or the appearance of

[5] Cf. Myers: Op. cit.

other hysterical symptoms occur later on. This case suffered from deaf-mutism, with extensive amnesia following upon exposure to the explosion of a shell, all of which symptoms cleared up completely. He eventually reached a neurological hospital in the north of England suffering from weakness of the lower limbs. Mental analysis brought to light earlier pre-war mental shocks, and when these had been talked out all functional symptoms completely disappeared.

It was gratifying to find that 15 of these cases (66 per cent.) eventually returned to duty.

One of them had been buried in a dug-out and suffered from amnesia for the events of the accident, hyperæsthesia of the right side of the neck corresponding to the second and third cervical areas, and fixation of the head owing to tonic contraction of the neck muscles.

Another had fallen into a shell hole full of mud, and had been dragged out by traction on the left arm. Immediately thereafter his left arm became completely paralysed, with anæsthesia, vasomotor disturbances, and exaggerated tendon reflexes. There was evidently organic trouble, due to traction on the brachial plexus, but this was overlaid by a considerable degree of "functional" disturbance. The patient was very easily hypnotised, and then lived through his painful experiences once more, showing some movement of the arm while doing so. This treatment, helped out by physical methods, produced a great improvement in his powers of movement and sensation during the following few days. Like the preceding case, this patient made a complete recovery in England and returned to duty.

While working in a London hospital I saw a similar case of monoplegia which had not been treated before reaching England. The paralysis was still complete, and improvement under treatment took place much more slowly, although the final result was satisfactory.

The general conclusion which I would draw from these cases, and from a few others whom I have myself treated at Craiglockhart after having previously had them as my patients in France, is that the early recall of submerged emotional memories by my method of modified light hypnosis not only removes the accompanying functional symptoms without danger of consequent relapse, but also greatly shortens the period of convalescence which these severe cases need before final discharge from hospital. If again subjected to great strain, no doubt these patients would succumb more quickly than they would have done had they not experienced their original shock. But this holds good of *all* methods. One does not need to work long in the field to discover this fact. 21 per cent. of my Cambrai cases had been in neurological hospitals (not my own) before. It should not be brought forward as a criticism of any method where *severe* nervous disorders are concerned.

Mental Analysis: Autognosis.

Patients seen at a late stage of their illness show the well-known fixation of symptoms so conspicuous by its absence at the front. But more serious than the symptoms themselves is the patient's state of mind. A distorted view of his illness has developed and has become linked up by numerous bonds of association with earlier emotional incidents of his life equally misunderstood by him. We have here to deal with the preoccupations of the neurasthenic rather than with the dissociation, or, as it were, mental carelessness of the hysteric.

The method to be employed is that of long persuasive talks with the patient, such as Dejerine advocates, and Rows, Rivers, and others have adopted in England, in the course of which one enters into his past mental conflicts and worries, explains fully the origin of his present symptoms, and helps him to see both the past and the present experiences in their right proportions. This analytic method aims at giving the patient a true insight into his mental condition, and I would therefore call it the method of *autognosis*. Hypnosis may often be used as a supplementary aid in the course of the analysis, to bring up earlier emotional experiences with the requisite vividness.

Examples of the application of this method are only convincing if reported in full, for which I have no space. It is only needed for the more intractable chronic cases of war neurosis, when it may extend over months. In the majority of acute and subacute cases these prolonged analyses are certainly not necessary. Nevertheless it is the most complete of the purely psycho-therapeutic methods, and theoretically the other methods (exclusive of mere suggestion) might be regarded as abbreviations of it.

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TEMPERATURE ENVIRONMENT AND THERMAL DEBILITY.

A STUDY OF THE BENEFICIAL AND INJURIOUS EFFECTS OF HEAT.[1]

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THE author first dealt with "temperature environment" from a biological point of view, describing the effects of thermal stimuli on plants and animals from those whose organisation is simple and unicellular to those which are most complex and highly developed. The section on "thermal debility" attempts to explain, on physiological and biochemical grounds, the production of debility by external thermic applications excessive in degree or duration. The entire paper is a sequel to one read by him some time ago[2] on the physiological action of certain local baths.

All thermal stimuli above that of the physiological skin zero, which is the temperature of the end-organs of the cutaneous nerves, are hot. The stimuli may be excitant or depressant, and each type may be beneficial or injurious. The skilled medical man can arrange his methods to get any desired effect. High temperatures and short applications are powerfully excitant, and long exposures to moderate temperatures are first stimulant and depressant later. The depression constitutes the atonic reaction to heat. In experiments by the author on the effects of whirlpool baths on muscular irritability it was observed that the duration of the bath must be diminished by one minute for every increase of 2° F. of the temperature of the water above the optimum, which was 108° for 20 minutes.

Thermal Debility.

When the human body is exposed to thermal stimuli, whether in the form of climate or hydriatic procedures, certain symptoms sooner or later appear. These vary from a feeling of enervation or lassitude, as after hot applications, to collapse accompanied by hyperpyrexia, as in the thermic fever of tropical regions.

The causes of these symptoms may be arranged in three groups: (1) Diminished oxygen supply to the central nervous system; (2) toxæmia; (3) thermal stimulation of the nerve cells. Groups 1 and 2 are the result of overheating of the blood consequent on diminished radiation of heat from the skin, Group 3 is due to the effects of heat on the cutaneous endings of the axons of the nerve cells, and to the effects of the heated blood on the cells themselves. We have analogies between these effects of heat and the effects of heat on certain lower animals.

Effects of Immersion in Hot Water.

The skin surface in the adult human being, which has an area of 15 square feet, has the function of cooling the blood by radiation and perspiration. With a pulse-rate of 72 per minute it suffices to maintain the normal blood temperature when the heat of the surroundings is suitable. If we immerse a part of the body in water at a temperature above that of the skin zero, a certain amount of heat loss is prevented, so that more loss must take place through the rest of the skin. The heart beats quicker so as to drive the blood more rapidly through the available skin area. These actions are correlated by the nervous system. The larger the size of the part immersed the greater is the pulse-rate, and there seems to be a definite relation between the pulse-rate and the area of skin available for cooling.

In a series of investigations made at Shepherd's Bush Orthopædic Hospital the following results were obtained after immersion for 10 minutes in still hot water at 106°:—

Part immersed.	*Pulse-rate.*	*Part immersed.*	*Pulse-rate.*
Hand	76–80	Leg	72–96
Forearm	78–95	Two legs	72–98
Foot	76–94	Whole body	86–103

The blood never loses all its excess heat, and there is heat accumulation in the tissues. Here, then, is our first underlying cause—diminished cooling of the blood.

[1] A paper read before the Royal Society of Medicine.
[2] Proceedings of Royal Society of Medicine, April, 1918.

The heated blood follows the physical laws which regulate the behaviour of all fluids when heated, for it takes up less oxygen at one end of the metabolic scale and less carbon dioxide at the other, and the higher the temperature of the blood the smaller is the quantity of gases absorbed. We may say that a state of thermal asphyxia is brought about. The tissues have a certain amount of intramolecular oxygen upon which they can carry on their functions for a while, and different tissues have different amounts, but the central nervous system has least. Again, some parts of the nervous system have more than others; probably the respiratory nuclei have least of all, for they fail before other nuclei. The blood conveys less oxygen to the nerve cells, so the condition resembles that of tropical marine animals. When the temperature of the water is raised they cannot get sufficient oxygen for their exalted metabolism.

Effects on Nervous System.

Many experiments have been performed upon the effects of a diminution in the oxygen supply to the nervous system, and they have all demonstrated damage of the cells. The longer the oxygen is withheld the less likelihood is there of recovery. Vacuolation, cloudy swelling, and extrusion of the nuclei of the nerve cells are some of the changes produced. The oxygen carried to the nervous system has a twofold action. It is a source of energy, and it protects the cells against toxic invasion and damage. The blood-supply to the nervous system is diminished when the cutaneous vessels are widely dilated in the hot bath.

When the asphyxia of the cells begins the toxins have an opportunity to act. These injurious substances are both intracellular and extracellular, and the pathological picture of their effects is similar to that of the loss of oxygen. The intracellular toxic substances are produced in greater amount than normal, because the heat applied to the body stimulates the cells to greater activity. The extracellular toxins, which are injurious substances in the blood and lymph, base their action on what is called the partition between solutions and fats. When water containing salts in solution, such as chloral and other narcotics of the methane series, is in contact with oil and the mixture is heated, the salts leave the water and enter the oil, and the process is reversed when the mixture cools. Perhaps toxic materials in the body fluids pass into the nerve-cell lipoids in thermal debility. It is interesting to note that evidence has accumulated to show that sunstroke is a toxic state. Again, Auld has shown recently that colloidal metals act better when pyrexia is present. Many toxic substances act as reducing agents. They use up much of the oxygen supplied by the blood; the end is an amount of toxin in excess of the oxygen necessary to destroy it.

The heat stimulates the hot spots on the skin, the cells of the nervous system are reflexly aroused, and they act more vigorously. Perhaps a point is reached when they behave like the amœba and draw their processes towards the cell body because the heat is too strong for them.

The result of all these actions is that the nerve cell has lowered vitality and the trophic impulses sent out are cut down. The diminution of stimuli to the muscles produces the enervating feeling which follows a hot bath or a warm climate.

Prevention of Thermal Debility.

Thermal debility can follow the use of any hydrotherapeutic procedure in which the temperature is above that of the skin zero, but it is more likely to follow immersions than douches, and the larger the area of the body immersed the more likely is it to appear. The douche is chiefly in the alternating form, and the cold jet removes the heat accumulated during the application of the hot jet. To avoid thermal debility following the massage douche an alternating douche to follow is advisable. Cold applications should, as a rule, follow every hot application—an almost invariable practice employed at Shepherd's Bush.

Several conditions predispose to thermal debility: fatigue, abuse of alcohol, improper clothing, some underlying condition, such as cardio-vascular disease, and a poor heat-regulating mechanism, which occurs in the aged and in the young child. Treatment injudiciously applied has the same effect. In constipation toxins from the alimentary canal circulate and may poison the nervous system when its vitality is lowered after too long application of heat. Possibly some of the tropical fevers are due to bacilli which flourish when pyrexia is present.

Heat up to optimum points for temperature and duration of application acts as a stimulant, but if it is not applied in such a manner its effects are injurious. We approach very closely the border-line between physiological and pathological actions, and we may cross the line if we are not careful, so it is necessary that hydrotherapeutic treatment should be under the control and direction of a specially trained medical man.

Observations on Effects of Hot Baths.

The symptoms and signs of thermal debility which are now to be described were observed in nine healthy men, who were placed in a general immersion bath at temperatures from 100° to 106° F. They were immersed sufficiently long to bring about thermal debility. The bath at 106° lasted 17 minutes and those at 102° and 100° had durations of 60 minutes each. All the patients complained of the same characteristic symptoms, but some differences were observed in a few of the physical signs. I shall first describe the progress of the man who was immersed in the bath at 102°, and then I shall show how the conditions which arose in the other patients differed from his.

Pulse.

When he was placed in the bath, with the water covering his trunk and limbs, he complained of fullness in the head, a sensation of throbbing and a beating pain in the temples. His pulse, which was 96 per minute before immersion, slowed down to 74, and it became full and less compressible. After six minutes the skin began to perspire profusely and the sweat trickled down over his face. The cutaneous vessels dilated and the strain on the heart was diminished. The pulse then accelerated till it attained the rate of 94 per minute, at which it remained constant till he had been immersed for 22 minutes, when fluctuations began. It became soft and compressible and its tension gradually fell.

In all the nine cases, except that of the man immersed at 106° F., the pulse showed the same characters. In sequence, the changes were slowing, acceleration, the maintenance of a steady level, and finally, a series of fluctuations and a general lowering of the level of the chart. The differences lay in the various changes being more intense as the temperatures applied increased.

In the man immersed at 106° F. there was no apparent slowing of the pulse in the early stages, but that does not preclude any having taken place, as quite possibly there was a very transient vaso-constriction on immersion. Baruch, however, states that there may be no slowing of the pulse when high temperatures are applied, and he attributes it to vaso-motor paralysis from excessive thermal stimulation.

One can conveniently fix an optimum duration for full hot baths by noting the pulse. As already mentioned the pulse slows, then accelerates, reaches a point at which it remains constant, and finally fluctuates. The fluctuations come on at decreased intervals with increasing temperatures. The fluctuations began, in my experiments, in 8 minutes at 106° F., in 22 minutes at 102°, in 23 minutes at 100°, in 27 minutes at 98°, in 30 minutes at 96°, and so on. With local immersions the best pulse and temperature chart is obtained when the bath is 108°. In my previous paper on the physiological action of certain local baths I showed that 108° is the optimum point for muscle work. Here, therefore, we have a triad of the vital phenomena which are most active at that temperature.

Various Symptoms: Temperature.

The respirations became shallow and rapid. After the bath at 102° F. for 60 minutes the patient complained of pain in the chest, persisting for several days, and he had bronchial catarrh. The tachypnœa is due to the heated blood exciting the respiratory ganglia. As regards his digestive system, the most marked feature was a feeling of nausea and epigastric depression, but he had no actual sickness.

The patient's general feeling was one of lassitude and weakness and his muscular working power declined. The explanation of those symptoms is that the trophic impulses from the central nervous system to the muscles are cut down. After local hot baths of long duration or frequent repetition a form of local muscular thermal debility may ensue, and it is to prevent this that the alternating douche is

employed, as a routine measure, after all types of bath at the Military Orthopædic Hospital.

After the periods of observations the men came out of the baths unaided. One of them fainted immediately. It shows that the brain is emptied of blood and the effects may only appear when the patient rises from the recumbent position. It is also a warning that the head and face should be bathed with cold water or a damp towel wrapped round the head before a hot bath is administered. By that means the cerebral capillaries are constricted and they do not feel the blood deprivation when the cutaneous vessels dilate.

The temperature taken in the mouth showed a marked elevation. The points attained were 101° with the bath at 106° F., 100·6° at 102°, 100° at 100°, and 99° at 98°. The temperature curve closely follows the pulse tracing, elevations, depressions, and constant levels corresponding on each after the pulse had accelerated, for there is no thermal depression corresponding to the initial slowing of the pulse.

In all cases complete recovery does not take place for 1–3 hours, because the body takes a considerable time to get rid of its heat accumulation.

Effects of Prolonged High Temperatures.

If we desire to observe the phenomena of hot external applications prolonged till a fatal issue takes place we must study them experimentally in animals. The effects are not quite the same, however, as in death in man from heatstroke and siriasis. Litten and others have carried out experiments on the effects of hot air in animals. Up to a point the symptoms observed by him corresponded to those observed by myself in the cases already described. They showed a weak, rapid pulse, an accelerated respiration, and a rise of temperature amounting to 4°–6° C. The blood showed a diminution in oxygen and carbon dioxide. Salivation, fatigue, feebleness, and spasms ushered in death.

When man is kept fully enclosed in hot air at 100°–130° C. he develops the same symptoms as these animals, and in addition his skin is hot and burning, the veins are full and red, and there is an outbreak of sweat.

In tropical regions many maladies are produced by the high external temperature acting on bodies whose vital activities and heat-regulating powers are depraved by intemperance, fatigue, overcrowding, and unsuitable clothing and diet. The high temperature induced in the body gives organisms and toxins an opportunity to act, and the result is one of the tropical thermic fevers or heatstroke. Vincent has shown that the blood of animals enclosed in hot air becomes toxic, and Sambon attributes siriasis to some specific organism. It may also produce curious alterations in the morals, as is shown by thermic frenzy and tropical moral insanity, in which sadistic and other moral perversions are marked phenomena.

The treatment of thermal debility, in its various forms, is mainly prophylactic. One must avoid physiological depressants and adapt one's diet to suit hot climates. In bath treatment the patient must be carefully examined beforehand, and the physician must avoid prescribing high temperatures for too long a duration, and he must, in most cases, follow hot baths by cold applications.

Conclusions.

1. Heat, which is Nature's stimulant, is largely responsible for the proper functioning of many of the organs in the body.

2. Its effects do not increase proportionately to its intensity beyond the optimum point, for beyond that any quantitative increase is followed by a depression of the vital activities.

3. These principles must be carefully borne in mind in writing any hydriatic prescription, and treatment must be carried out with due regard for them.

4. Thermal stimuli which are excessive in degree or duration are followed sooner or later by thermal debility, so we must, at all costs, avoid that most undesirable condition.

5. Thermal debility can be prevented by observing the cardinal physiological principles as regards optimum temperatures and durations and by following the rule of applying cold after heat.

6. If treatment is prescribed or carried out in a careless manner, or if the individual depresses his vital activities by excesses of different kinds, heat is no longer beneficial but it is positively injurious. On the other hand, it is an invaluable therapeutic agent, from the hydriatic and climatic points of view, if the patient and the medical man walk in the paths of physiological righteousness in making use of it.

A REPORT ON

THE ACTION OF FLAVINE AND ITS DERIVATIVES.

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III.[1]

AN EXPERIMENTAL INVESTIGATION ON THE ACTION OF FLAVINE AND ITS DERIVATIVES IN BACILLÆMIA.

THE claims on behalf of the flavine compounds as an approach to the ideal antiseptic have led us to investigate their bactericidal powers within the circulation. The two substances tested were proflavine and acriflavine.

It has been claimed for flavine that its effectiveness is distinctly increased as an antiseptic by the presence of serum; that this efficiency is maintained; that the concentration which inhibits phagocytosis is much stronger than that which is bactericidal; that its irritating effect upon the epithelium is small; and that it can be administered intravenously and intraperitoneally without ill-effects in a dilution of 1 in 1000, stronger concentrations being liable to agglutinate the red corpuscles. It is said not to exert any toxic action on any special organ. Browning and his colleagues[2] have administered 300 c.cm. of a 1 : 1000 solution intravenously to an adult. A considerable measure of success has been claimed for other antiseptics, particularly eusol, in the treatment of septicæmia. It would appear, however, that the beneficial effect of eusol under these circumstances is to be attributed to its destructive effect on bacterial toxins rather than to its bactericidal action.

The experience with eusol employed in this way in hospitals in this command for the treatment of pyæmia after gunshot wounds has not been so constantly favourable or encouraging as to lead us to recommend it. We thought it possible that in one or other of the flavine compounds there might be found a substance useful in the treatment of bacillæmias, secondary to wound infection, thereby reducing the mortality from the cases of pyæmia or septicæmia so often met with in military surgery. Three series of experiments have therefore been carried out with a view of throwing light on the germicidal action of flavine or its derivatives administered intravenously on organisms in the blood-stream.

Series I.—On the Toxic Effect of Flavine Injected Intravenously into Laboratory Animals.

In order to estimate the probable concentration in the blood of the quantity of antiseptic injected, we were led to inquire into the relation between the blood volume and the body weight. Dr. W. H. Wilson, professor of physiology at the Government School of Medicine, Cairo, kindly supplied us with tables, giving the required data for a man, cat, rabbit, and guinea-pig. We are much indebted to him for the great interest and trouble he took in collecting this information. The following figures may be quoted from these tables:—

Man	Body weight,	70 kg.	.....	Blood volume,	3250 c.cm.
Cat	,,	,,	2 ,,	.....	,,	,,	100 ,,
Rabbit ...	,,	,,	700 g.	.....	,,	,,	50 ,,
Guinea-pig	,,	,,	400 ,,	.....	,,	,,	16·4 ,,

These figures are calculated from the formula and species-constants given by Dreyer, Ray, and Ainley Walker,[3] who showed that the blood volume is a function of the body surface rather than of the body weight in any given species.

[1] Parts I. and II. were published in THE LANCET, 1919, i., 251.
[2] Browning, Gulbransen, Kennaway, and Thornton: Brit. Med. Jour., Jan. 20th, 1917, p. 73.
[3] Dreyer, Ray, and Ainley Walker: Proc. Roy. Soc., lxxxii., 545; lxxxiv., 460.

Thirty-five experiments were made to determine the minimum lethal dose of proflavine and acriflavine for cats. All injections were made into the external jugular vein under ether or chloroform anæsthesia. We tabulate the results of some of the experiments:—

Proflavine 1 : 1000 in Normal Saline.

Exp.	Weight of cat.	Amount injected.	Result.
1	1·8 kg.	20 c.cm.	Died in 2 minutes.
2	1·8 ,,	10 ,,	Quite well 7 days later.
3	2·5 ,,	20 ,,	Recovered. Used again for Exp. 9.
4	1·36 ,,	15 ,,	,, ,, ,, 8.
5	2·6 ,,	18 ,,	Recovered.
6	1·6 ,,	20 ,,	,,
7	1·25 ,,	25 ,,	Died in 30 minutes.

Acriflavine 1 : 1000 in Normal Saline.

8	1·36 kg.	10 c.cm.	Died in 1½ hours.
9	2·5 ,,	5 ,,	Very ill for 2 days.
10	1·3 ,,	4 ,,	Survived with difficulty.
11	3·0 ,,	10 ,,	Ceased breathing, but recovered rapidly.

The effects were largely dependent upon the rate of injection. Rapid injection usually produced respiratory failure, the heart continuing to beat. The animal could usually be revived by artificial respiration. This effect should be considered in relation to the agglutinability of the red corpuscles by flavine.

The agglutination effect could be reduced to a minimum by giving the injections very slowly. Deep yellow staining of the mucous membranes—nose, conjunctiva, &c.—is produced by the larger doses. It appears within a few minutes, is marked for 24 hours, and then slowly fades. This staining effect is equally conspicuous in the case of rabbits. We found that a 1 : 100 saline solution of pro- and acri-flavine could readily be injected into the auricular vein of rabbits without immediate ill-effects if care were taken to inject slowly. Owing to the network of veins in the rabbit's ear, strong solutions given slowly into one vein are well diluted with blood before reaching the general circulation. As the result of numerous experiments, we found that a dose of 0·01 g. acriflavine or 0·02 g. proflavine could safely be given in the above manner to an adult rabbit.

From the results given above it would appear that the dose for average cats was about the same for injections direct into the external jugular vein. Theoretically, on the basis of the relative blood volumes, the equivalent dose for cats would be about twice that for rabbits. On the same basis a 70 kg. man (11 stone) should take 0·65 g. of proflavine suitably diluted. In the instance noted above, 0·3 g. of acriflavine was actually given without ill-effects (i.e., 300 c.cm. of 1 : 1000). Proflavine appears to be rather less than half as toxic for rabbits as compared with acriflavine.

The urine of several of the rabbits used in these experiments was found to be stained bright yellow when passed within a few hours of the injection of a large dose. It is of interest to note that rabbits do not stand repeated injections of sublethal doses at all well. Thus, a rabbit which received three doses, at 12 hours intervals, of 0·01 g. acriflavine died on the third day, previously refusing food and showing other signs of indisposition.

Series II.—On the Fate of Flavine after Injection into the Circulation, and its Effects upon the Blood Corpuscles.

Experiment I.—2 c.cm. of blood withdrawn by sterile syringe from the auricular vein of a rabbit. 1 c.cm. of 1 per cent. solution of proflavine slowly injected intravenously into this rabbit. 2 c.cm. of blood withdrawn as above from the opposite ear vein, three minutes after completing the injection. 2 c.cm. of blood again withdrawn 30 minutes after the injection. The three samples of blood were centrifuged aseptically, and the clear serum transferred to small tubes. No appreciable difference could be made out between the tint of the three sera. An equal volume of the culture of *Staphylococcus aureus* emulsion in normal saline was added to each serum, well mixed and incubated at 37° C. These emulsions contained about five million staphylococci per c.cm. After appropriate dilution, equal volumes were plated out at the end of 12 and 24 hours. The number of colonies was approximately equal for all three sera on both sets of plates. No evidence of the presence of flavine in the blood could be obtained by naked-eye inspection or bactericidal tests, three minutes after its injection into the circulation. The rabbit was killed two hours later. The serous membranes particularly and the tissues generally to a less extent were tinged a distinct yellow. The bladder contained fluorescent yellow urine.

Experiment II.—1 c.cm. of blood withdrawn aseptically from auricular vein of rabbit. 2 c.cm. of 1 per cent. solution of proflavine in normal saline injected very slowly into auricular vein. On the conclusion of the injection the mucous membranes of the mouth and nose and the conjunctiva were observed to be quite yellow. Twenty minutes later 5 c.cm. of blood withdrawn from the heart and rabbit killed. The pleura, peritoneum, and connective tissues were stained bright yellow, and the muscles distinctly so. The centrifuged heart serum appeared to be distinctly more yellow than the control. Equal volumes of the two sera were inoculated with a loopful of a very dilute staphylococcic emulsion. On plating immediately, the sera yielded about 30 colonies. Plated again after 24 hours' incubation, numerous colonies appeared on both plates. If the difference in colour between the sera was due to a trace of flavine, the trace was insufficient to have any definite inhibitory effect on the growth of staphylococci.

Experiment III.—A rabbit of 700 g. was bled aseptically into a flask containing 10 c.cm. of citrate solution. The blood was then defibrinated. About 40 c.cm. was thus obtained. 1 c.cm. of a 1 per cent. emulsion of an agar slope culture of *Staphylococcus aureus* in normal saline added. Mixture incubated at 37° C. After 12 hours 0·5 c.cm. of a 1 per cent. solution of acriflavine added. Subculture made at hourly intervals. The blood antiseptic mixture was found to be sterile by the twelfth hour. *In vitro*, therefore, the amount of flavine used in the *in vivo* experiment of Series III. was sufficient to sterilise the whole blood, after infection with a large dose of staphylococci, provided that the antiseptic remained in circulation. This experiment also serves to confirm the high potency of this antiseptic for disinfecting blood, provided sufficient time be allowed for it to act.

The following experiments were made on the agglutinability of the red blood corpuscles by the flavine compounds.

A series of dilutions of proflavine and acriflavine in normal saline were added to equal volumes of a 2·5 per cent. saline suspension of washed sheep's and rabbit's red blood corpuscles.

Sheep's Corpuscles.

Time of action.	Concentration of antiseptic in mixture.				
	1 : 400	1 : 800	1 : 1600	1 : 3200	1 : 6400
1 minute proflavine	++	+	0	0	0
1 ,, acriflavine	++	0	0	0	0
2 hours proflavine	+++	+++	++	+	0
2 ,, acriflavine	+++	+++	++	0	0

Rabbits' Corpuscles.

1 minute proflavine	+	0	0	0	0
1 ,, acriflavine	+	0	0	0	0
2 hours proflavine	+++	+++	+	0	0
2 ,, acriflavine	+++	+++	+	0	0

+++ = Complete agglutination. + = Clumps just visible to the naked eye.

Fleming[4] found marked agglutination of human blood corpuscles up to a dilution of 1 : 3200. He showed that tissues, stained bright yellow by injections of flavine, did not inhibit the growth of a small quantity of *B. perfringens* implanted into them.

It is evident that proflavine and acriflavine must pass out of the circulation too rapidly to exert any decided bactericidal action in the blood-stream. We have carried out, however, a number of experiments on cats and rabbits with a view to testing the therapeutic action of flavine in bacillæmia.

Series III.—To Determine the Influence of Flavine Injected Intravenously on Organisms Circulating in the Blood-Stream.

The bacteria used were *Staph. pyogenes aureus*, *Strept. pyogenes*, and *B. Friedländer*. The dose of bacteria injected was estimated to be somewhat above the minimum lethal dose, while that of the flavine was sublethal. The 10 experiments were carried out on rabbits. A control experiment was performed on each occasion with an animal of

[4] A. Fleming: THE LANCET, 1917, ii., 841.

approximately equal weight, using the bacterial emulsion alone. Two methods of dosage were employed. By the first method, small doses of flavine were repeatedly injected at comparatively short intervals, beginning a few minutes after the injection of the infecting organism. By the second method, an interval of 12 hours was allowed to elapse before commencing the injections of flavine which were given thereafter at longer intervals. All the injections were into the auricular vein. Cultures were made from the heart blood after death of any animal, and occasionally during life. Smears and cultures were also made, in some instances from the liver, spleen, and kidneys, immediately after death. Yellow staining of the externally visible mucous membranes was frequently noticed after one or more injections of flavine. The flavine was freshly dissolved in normal saline before each experiment. [The results were here tabulated.]

Conclusion.

The injections of flavine appeared in some of the Series III. experiments to have some *delaying* effect upon the early death of rabbits from staphylococcal septicæmia. (Experiments II., III., IV., V.) It would appear, however, that the dose required to produce this effect may later contribute to the death of the animal. (Experiments VI. and VIII.) The net result is that no definite curative influence can be demonstrated either with proflavine or acriflavine in the treatment of bacillæmia due to the organisms injected in these experiments. This result is only what might be expected in view of the rapidity with which the flavine compounds are eliminated from the circulation, as shown in the experiments of Series II.

It is possible by the use of a method which ensures the gradual dilution of the flavine solution by the blood to guard against the immediate effects of its agglutinating action on the red blood corpuscles.

In vitro, flavine proved highly efficient as a disinfectant for blood, if allowed time to exert its full action.

INFECTIVE SCAR TISSUE AND ITS RELATION TO PAINS,

PARTICULARLY PAINFUL AMPUTATION STUMPS.[1]

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ALL the structures which have been divided, as in the operation of amputation, take part in the healing of the wound. Thus normally and naturally there is a reparative osteo-myelitis, osteitis, periostitis, myositis, neuritis, arteritis, phlebitis, lymphangitis, &c., and their attendant external and surrounding inflammations like perineuritis. The perineuritis is really a lymphangitis, and, clinically, there is a most important practical observation to be made; the peri-inflammation—e.g., perineuritis—extends outside higher up the structure, a nerve trunk, than the concurrent internal endoneuritis. This enables the surgeon to see that a nerve is divided above its internal inflammation.

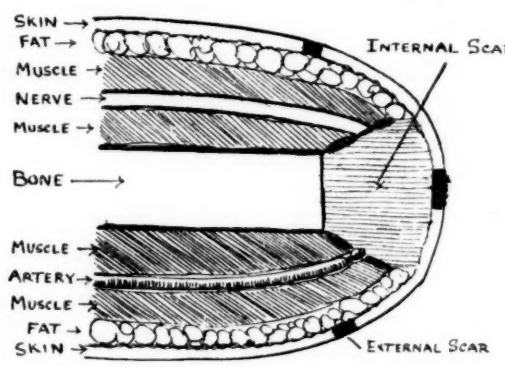
Painful Nerves.

Beneath the sawn end of the divided bone there is an empty space, a dead space, which becomes filled up with scar tissue, which takes its character from that of the healing of the wound. At times it is filled with non-infective scar tissue, as when the wound heals well; and at others the scar tissue is irritative and infective from the micro-organisms imprisoned in its meshes. Professor Marinesco and I[2] have shown at the Royal Society of Medicine some organisms grown from the nerve-endings in a wound which had been healed for three years. Hence the local cause for painful nerves is to be found in a terminal infective neuritis and not in any "bulbosity." A bulbous nerve results from every division of a nerve trunk. But if the ends of the nerves are inflamed the bigger and the more tender the nerve bulb.

[1] Brief abstract of Arris and Gale lecture delivered before the Royal College of Surgeons of England, Feb. 19th, 1919. The lecture was freely illustrated with the epidiascope.

[2] Proceedings of the Royal Society of Medicine, April, 1918, xi., 4-24.

The healing of the wound apparently by first intention does not exclude the possible presence of harmful organisms in the tissues of the deeper part. A sharp line is to be drawn between the external scar in the skin and the internal scar under the bone. The condition of the former is an uncertain guide to the condition of the latter. It would appear that the changes in the behaviour



of the phantom limb are a better guide. Previous to this inflammatory theory of the origin of the pains of wounds and amputation stumps, the pains were always regarded as due to nerve adhesions and strangulation by cicatrices. From an examination of painless stumps it is plain that such conditions are frequent in them and that they themselves produce little or no pain provided the nerve-end is not inflamed. Hence it is possible for the pathologist to decide by the presence or the absence of signs of inflammation if any given specimen shows evidences of the peripheral or central (neurotic) origin of the pain. At least nine out of ten complaints are purely central.

Reparative Processes.

Silk and other unabsorbable material, such as iron, is slowly fragmentated and removed when situated in infective scar tissue. They are not isolated by encapsulation as in ordinary non-infective scar tissue. Thus all foreign bodies are best removed and their tracks drained. The body only slowly sterilises infective scar tissue. Silk ligatures are apt to become, if infected, centres of irritation. Specimens were shown to illustrate these points, and new bone formations, actual increases in the length and breadth of the divided bone, bony bridges, non-infective sequestra being built into the scar like a brick into a wall, the mushroom flattening of the sawn end of a bone, &c. The osseous problems are many and various.

By reparative myositis the muscles attach themselves to the internal scar which in its turn is attached to the end of the bone. This is the normal reattachment of muscles to the end of the stump.

Spread of Infection: Regeneration of Nerves.

Among channels for disseminating the irritation of infection the vascular lymphatics come first. They carry the infection furthest and widest. The lecturer showed a triangular plug of scar tissue in the popliteal space causing an intractably flexed knee. In this irritant scar tissue is to be found the key to the flexion of joints.

The irritation of this inflammation ascends along the vessels like smoke up a chimney. Particular reference may be made to those situations in the body where the "smoke" meets a nerve, as the internal saphenous nerve in Hunter's canal,[3] the sciatic nerve in the upper part of the popliteal space, the posterior tibial nerve in the calf, and the neuro-vascular bundle on the inner side of the arm. If the irritation gets into a place like the chest, whence the scar tissue cannot be removed completely by operation, time and drugs alone cure, and we can understand the intractable nature of brachial neuralgia.

All these considerations may be called those of an early and often immediate sequence. Usually nerves regenerate more slowly. The regeneration of a nerve is like to the flow

[3] Brit. Med. Jour., June 15th, 1918.

of a great river: if it meets an obstruction it banks up, forming a lake until it gets round the obstruction. In regeneration of nerves an enlargement corresponding to a lake is formed; it may be termed a *regeneration neuroma*. They may be multiple, for it is as difficult to stop the regeneration of nerve as to stay the flow of a large river. As they grow the new-formed regeneration fibres, tender and destitute of a medullary sheath, branch, and if they grow into yet irritative infective scar tissue pain is bound to result. If the scar tissue has been rendered non-irritative by the body chemicals in the interval, when regeneration occurs it is not accompanied by pain. Thus we can understand pains coming on again and dying out. In conclusion, drawings of specimens illustrating the presence of foci of inflammation in new nerve-clusters and fibres themselves were shown.

QUININE AS AN ABORTIFACIENT.

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Glaister[1] states that all drugs having an abortifacient effect act in one of three ways: (1) by a toxic action on the system; (2) by acting locally or directly on the muscular structures of the uterus; (3) or by acting locally or indirectly on the uterus through the gastro-intestinal or genito-urinary tract. He cites quinine as one of those to be classified under the second heading. A herbalist was brought to trial before the Recorder at Bristol in July, 1918, on a charge of producing abortion by means of quinine.

Analysis of Pills.

One of us had occasion recently to examine a large number of pills brought by the police from the herbalist and apparently sold in large numbers to his female clients. The following analytical figures were obtained by the analysis of one batch of these pills.

Pills of a light brown colour mixed with dark pills in boxes (65 light and 15 dark) in each box.

Weight of light pill, 0·105 g. Moisture, 10 per cent.; organic matter, 87·8 per cent.; ash, 2·2 per cent. The organic matter gave characteristic reaction for quinine sulphate, which by the Stas process amounted to 70·4 per cent. of the pill mass, equal to 0·077 g. per pill, or 1·19 gr. of crystalline quinine sulphate.

Weight of black pill, 0·154 g. This pill was not entirely soluble in water. The following figures were obtained on analysis: moisture, 3·0 per cent.; organic matter, 53·9 per cent.; ash, 43·1 per cent. No sugar and no alkaloid were detected; no lead was present. A portion of pill was extracted by alcohol in a Soxhlet extractor. The following figures were obtained: alcohol, soluble portion, 19·3 per cent.; bicarbonate of soda ($NaHCO_3$), 63 per cent.; residue (maize starch), 12·2 per cent.

The light pill therefore appeared to be a quinine pill, and the dark one a bicarbonate of soda pill with starch and organic excipient.

The purchasers of these pills were directed to take a variable number (from 10 to 15), amounting to an average dose of 15 gr. of quinine. Although many analyses of this type of pill were undertaken the pill was practically always identical in composition, and the dosage in all cases amounted to about 15 gr. of crystalline quinine sulphate, taken together with a pill containing sodium bicarbonate and a vegetable substance, probably cascara sagrada extract.

Result of Trial of Accused.

What was the effect of the quinine and to what extent was its abortifacient effect in character and amount established? Several patients miscarried apparently as result.

Evidence (medical) showed—(1) that quinine is a protoplasmic poison and likely to affect growth of tissues of ovum; (2) that experiments on animals have shown that it produced rhythmical contraction of the uterus; (3) that it stimulates uterine contraction in labour; (4) that in malarial countries abortion is frequent, in some degree probably due to quinine but more largely due to malaria; (5) that quinine in large doses produces toxic symptoms and had even caused death.

The Recorder asked the jury to decide: 1. Was quinine in ordinary doses a noxious drug? 2. Was quinine in large doses a noxious drug? 3. Was the drug administered by the accused with intent to produce abortion? The jury replied to (1) No; (2) Yes; (3) Yes. The accused was convicted and sentenced to 12 months' hard labour.

Action of Quinine.

The following points bear on the evidence and the learned Recorder's charge to the jury:—

1. Quinine in doses of 1 : 20,000 paralyses amœba and paramœcium, also destroys amœbic movements of white blood corpuscles (Binz). These observations have been confirmed.

2. Experiments on female animals have shown that it produces rhythmical uterine contraction (Cushing).

3. It is well known to stimulate uterine contractions in labour and is recommended by numerous British and American obstetricians for that purpose.

4. In malarial countries abortion is frequent. This may be due to the malaria, although it has been attributed to the large doses of quinine given.

5. Quinine in large doses is toxic. In 1885 two soldiers took 3 dr. each; one vomited and recovered, the other died. One of us had to treat a child, under a month, which had been accidentally given a 5 gr. dose intended for an adult; it was resuscitated with difficulty. A case was reported in THE LANCET of July 6th, 1918, in which a dose of 5 gr. caused œdema of eyelids, urticaria, vomiting, and headache. Doses of 1 gr. three times in 48 hours and 1 gr. in 48 hours produced the same result in this patient. Doses of 300 gr. and upwards have produced partial temporary blindness and loss, permanently, of colour vision.

There is no doubt that quinine in large doses produces toxic symptoms and, in some patients, even in small doses. Doses of over 10 gr. in the majority of non-malarial patients produce some toxic symptoms, and doses of 20 gr. and upwards, if repeated, may produce definite poisoning. Elimination, although rapid, is not so rapid as to allow of the repetition of doses of over 10 gr. in less than 12 hours.

In the case above the drug was held to be "noxious" in the doses given, and as to the intent there was no doubt. The learned Recorder's charge to the jury appears to cover the ground completely, and the jury had no hesitation in answering the questions put.

We are indebted to Mr. F. Beach, M.A., for his assistance with the analytical work.

[1] Medical Therapeutics and Toxicology.

A CASE OF ACUTE ASCENDING PARALYSIS.

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ACUTE ascending paralysis, first described by Landry in 1859, is produced by disease spreading rapidly upwards through the spino-muscular neurones from the lowest segments of the cord to the medulla oblongata, and is a pure motor palsy usually ending in death by paresis of the respiratory muscles.

Deaths from Landry's paralysis in the United Kingdom are recorded by the Registrars-General under Group 63 B of "The Manual of the International List of Causes of Death." This group, including other diseases of the nervous system, was analysed in 1913 for England and Wales, and I am indebted to the Registrar-General for the knowledge that there were 57 deaths, 28 of males and 29 of females, from acute ascending paralysis, equal to an annual death-rate of 1·6 per 1,000,000 living.

Account of Case.

Landry's paralysis is an uncommon disease, of uncertain cause, unknown ætiology, and of obscure morbid anatomy. The following case illustrates the course of the illness and has other points of interest.

Previous history.—Pte., aged 30, married, coal-miner, of temperate habits, smoked five cigarettes a day, drank an occasional glass of beer; no serious illness before joining the Army in 1915. Nothing unusual in family history. He contracted syphilis and gonorrhœa on Dec. 7th, 1915; three days later primary sore appeared on prepuce. When

admitted on Jan. 9th, 1916, to a military hospital he had "large amygdaloid glands in the groins." The sore was not examined for *Spirochæta pallida*; blood not tested for Wassermann reaction. Intramuscular injections of 1 gr. hydrargyrum, nine in all, were given on Jan. 18th, on Feb. 4th, 11th, 18th, and 25th, and on March 3rd, 10th, 17th and 24th; intravenous injections of 0·6 g. kharsivan on March 2nd and 15th. He was discharged to his regiment on March 27th, with a note that he should attend hospital every tenth day and that a blood test was due on April 27th. The blood was not examined and antisyphilitic treatment ceased. In May he had a sore-throat, but did not report sick.

Present illness.—On July 1st he began to vomit after meals and was admitted to another military hospital. Vomiting occurred within ten minutes of taking food and was neither preceded nor accompanied by stomachic pain. Three days later he complained of weakness in his legs, and by the seventh day he could neither stand nor sit up in bed. Intermittent vomiting continued for 19 days, and on two occasions came on in the middle of the night. He was admitted to the Royal Naval Hospital, Pembroke Dock, on the twentieth day of his illness.

Nervous System.

Motor functions.—The patient could neither flex nor extend his feet and legs, and was unable either to adduct or to abduct the thighs. He could flex, but could not extend, the right thigh; flexion and extension movements of left thigh were weak. No paresis of head, neck, or arm muscles; voluntary movements of upper limbs were coördinated. The patient was right-handed. Loss of power in the thighs gradually increased; on the twenty-sixth day paralysis was complete; affected muscles flaccid; no abnormal change in their reactions to electricity.

Weakness in the forearm muscles appeared on the twenty-seventh day; right grip was weaker than left, this being more apparent on the twenty-eighth day. By the morning of the twenty-ninth day only weak flexor and extensor movements of the hands and wrists were possible; complete paralysis of arm and shoulder muscles. The muscles of the head and neck, together with intercostals, recti abdominis, and diaphragm, were not affected. At 5 P.M. he began to lose the power of speech, the last words, "Yes" and "No," being lost at 5.30 P.M. Paralysis of the diaphragm and recti abdominis muscles occurred at 6.15 P.M., after which laboured breathing was carried on by the intercostals and by the extra-respiratory cervical muscles. Cheyne-Stokes breathing began at 6.30 P.M. and the patient died at 7.5 P.M.

Sensory functions.—Sensibility to touch, pain, and temperature were normal, and with the exception of pain in the throat and stomach, associated with hiccough on the twenty-eighth day, the patient had no subjective sensations throughout his illness.

Reflexes.—The plantar and other superficial reflexes gave a normal response. Knee-jerks, present on the twentieth day, were lost on the twenty-first day. Ankle-jerks were absent on admission; deep reflexes at wrist and elbow disappeared on the twenty-seventh day. Jaw reflex not affected. Initial retention of urine occurred on the twenty-fifth day; from the twenty-sixth day intermittent but no true incontinence.

Higher cerebral functions.—Intelligence was clear almost to the end, and for an hour after speech had been lost the patient could nod or shake his head in answer to questions as to his wants. Consciousness was lost half an hour before death.

Cranial nerves.—Vision, hearing, taste, and smell were unaffected. Lieutenant J. Cropper, O.S., R.A.M.C, afterwards drowned in the torpedoed Hospital Ship, *Britannic*, had examined the patient's eyes in May and kindly gave me the following notes: "Vision, 6/18 in each; hypermetropic astigmatism, c. $\frac{-\ +2}{+1{\cdot}5/90°}$, V. = 6/6 in each. Some nystagmus on upward movement. Optic discs are normal."

Vegetative nervous system.—The pupils dilated to shade, the cilio-spinal reflex was present, and the temperature remained within normal limits until it rose to 102° F. shortly before death.

Other Systems.

Circulatory and respiratory systems.—Heart and lungs, normal on admission, were not affected until the last day of life, when the pulse-rate rose to 100 at 5 A.M., and to 120 at noon, with a systolic blood pressure of 150 mm. Hg. Before death the sphygmograph recorded the rate of 160. Signs of diffuse bronchitis also appeared that day and the patient became cyanosed.

Hæmatopoietic system.—Spleen not enlarged. Blood count showed 5,666,000 red blood corpuscles and 10,180 leucocytes per c.mm. The differential leucocyte count (683 counted) gave polymorphonuclear leucocytes as 94·7, lymphocytes as 4·2, and hyaline cells as 1·1 per cent. Arneth's nuclear count indicated a destruction of polymorphonuclear leucocytes having 3, 4, and 5 lobed nuclei, with an increase of those having 1 or 3 lobed nuclei.

Polymorphs grouped according to nuclear lobes.	I.	II.	III.	IV.	V.
Patient's percentage in each group...	22	42	25	10	1
Normal percentage in each group ...	6	35	42	16	1

The figures give an index of 76, the normal Arneth index being 62.

Alimentary and urinary systems.—Patient's teeth were good, his tongue was coated, and appetite was poor. Constipation was a leading symptom. Calomel gr. iv. and cathartic tablet on successive nights, followed by mist. alba in the mornings, failed to act. One-drachm doses of magnesium sulphate in warm water every hour for nine hours had no effect, and on the twenty-fourth day a two-pint soap, water, and turpentine enema was without result. One minim of croton oil on the twenty-sixth day caused no discomfort and only a slight result. A turpentine enema on the twenty-eighth day had a slight effect. He vomited once on that day, and three times on the twenty-ninth day. Severe intractable hiccough began at 2 A.M. on the twenty-eighth and continued until the diaphragm became paralysed on the twenty-ninth day. The urine was normal until the twenty-eighth day, when a trace of albumin appeared.

Bacteriological Examination.

Klebs-Löffler bacilli were not present in the throat. Blood from the median basilic vein was sterile, but the Wassermann reaction for syphilis was strongly positive.

Diagnosis.

A lesion in the lower motor neurone is indicated by flaccid motor paralysis with abolition of the deep reflexes, but without sensory disturbance. Four acute diseases having these signs in common have been described: acute anterior poliomyelitis; subacute anterior poliomyelitis (the flaccid or Duchenne type of progressive muscular atrophy); polyneuritis confined to motor nerves; and acute ascending paralysis. The case was diagnosed as acute ascending paralysis for the following reasons.

1. Acute anterior poliomyelitis is an infective, sometimes epidemic disease, usually of early childhood, and is distinguished by pain on passive movements of the affected muscles, by an asymetrical paresis which may spare certain muscles in the paralysed limb, and by permanent muscular wasting due to destructive changes in the corresponding motor nerve cells of the cord. The muscles are paralysed abruptly and simultaneously rather than progressively, and the palsy has a tendency to diminish. The disease in children is characterised by fever, but in adult life there may be no fever, as the nervous system is less sensitive.

2. Subacute anterior poliomyelitis (the *paralysie générale spinale antérieure subaigüe* described by Duchenne in 1853) is a progressive paralysis usually beginning in the legs, spreading to the arms and then to the trunk, associated with changes in the electrical reactions and wasting of the affected muscles; and the distal muscles of the affected limbs are usually more completely paralysed than the proximal muscles. This disease is distinct from chronic anterior poliomyelitis (progressive muscular atrophy) in its onset, in the distribution of the paralysis, and in the subsequent recovery of muscular power. By many writers it is regarded as a motor polyneuritis.

3. Polyneuritis confined to the motor fibres of peripheral nerves has been described as a rare form of multiple neuritis. The symptoms are identical with those of subacute anterior poliomyelitis, and clinically the diseases appear to be one and the same. The distribution of the palsy points to a lesion in the anterior roots, and subsequent recovery of the muscles shows that the anterior cornual cells were not seriously affected, since no regeneration of nerve fibres can occur if the anterior motor cells are destroyed. But the disease cannot be rightly named on these grounds, for nerve cells may incur morbid changes without destruction; and, indeed, changes in the anterior cornual cells have been described both in subacute anterior poliomyelitis and in severe multiple neuritis.

4. In acute ascending paralysis there is rapid, symmetrical, progressive, ascending, and flaccid paresis, with no sensory disturbance, fever, or loss of sphincter control, and without changes to electricity or wasting in the muscles. Beginning in the legs, the loss of power extends upwards through the trunk to the arms, and death results from respiratory paralysis. Some hold that there is no time for muscular atrophy or reactions of degeneration to develop; but, on the other hand, patients may live for

several weeks, and the absence of wasting may be due to a toxin which, like an anæsthetic, destroys the motor but not the trophic functions of nerve cells. A filter-passing organism has been reported as the cause of Landry's paralysis, and a virus of this nature is the accepted cause of acute anterior poliomyelitis. It will be noted that this malady, unlike others in the same group, is named after its symptoms, and acute ascending anterior poliomyelitis might be a better name.

Treatment.

Apart from relieving symptoms, treatment was of necessity speculative. In the first place 20,000 units of diphtheria antitoxin were given in the hope that the paralysis was post-diphtheritic, and later on three pints of normal saline were injected subcutaneously to dilute whatever toxin might be present.

Sectio Cadaveris.

A necropsy on the day after death showed a well-developed body, with rigor mortis firmly set, and diffuse post-mortem staining.

The brain weighed 54 oz. There was no evidence of meningitis, but the spinal cord was congested and there were small hæmorrhages under the pia mater. In the pericardial cavity was 1 oz. of serum and there was one large milk spot on the pericardium. The heart was contracted in systole, the muscle appeared healthy, and the valves were intact. Both lungs showed venous congestion, and there was a recent exudation of lymph on the pleura of the right lower lobe anteriorly. There was no fluid in the peritoneal cavity. The intestines were distended and decomposition had set in. The liver was normal and the kidneys (right 200 g., left 205 g.) were healthy. The prostate, 7 oz., was not enlarged.

The spleen was atrophied, wrinkled, and weighed 80 g., less than half the normal weight.

It is to be regretted that no monkeys were available for the injection of glycerinated portions of the cord, that it was not possible to have the nervous system histologically investigated by an expert, and that the spinal fluid was not tested in life for the reactions of syphilis.

Remarks.

Acute ascending paralysis was first called a functional disease because nothing was detected after death. But as methods of investigation become more refined functional diseases gradually disappear. In Landry's paralysis morbid changes have been found in the anterior cornual cells and in the peripheral nerves, and the disease appears to be an acute intoxication of the lower motor neurones. Moreover, the alteration in leucocytes, the *atrophy* of the spleen, and the intractable constipation might result from the action of a toxin. Constipation in this disease is generally ascribed to paresis of the trunk muscles, but the complete loss of peristalsis in response to powerful stimuli could also be explained by toxic changes in the sympathetic plexuses of Auerbach and Meissner.

There may be a direct relation between syphilis and this disease, because the patient received antisyphilitic treatment sufficient to sterilise the blood at the time, to prevent peripheral lesions, and to inhibit the formation of immune substances, but insufficient to sterilise the whole body or to kill spirochætes in the central nervous system; and because inadequate treatment with the arsenical preparations may be followed by early syphilitic affections of the brain and spinal cord.

In this case, despite the short interval of 206 days which elapsed between primary syphilitic infection and the onset of nerve disease, acute ascending paralysis was most probably due to syphilis.

THE LATE DR. C. ALDRIDGE.—Charles Aldridge, M.D., C.M. Aberd., L.R.C.P. Lond., who died at his residence, Plympton, on April 19th, was born at Leeds, graduated at Aberdeen University in 1872, and was for some time senior assistant medical officer at the West Riding Asylum. About 46 years ago he joined his late father, Mr. J. Aldridge, as joint proprietor and resident physician at Plympton House Asylum, and after his father's death he was joined by Dr. A. Turner, the present physician. Dr. Aldridge retired from active work a few years ago. He was highly respected and esteemed. He was formerly honorary physician to the Plymouth Public Dispensary, a member of the Plympton board of guardians, and later of the rural district council. He leaves a widow.

Clinical Notes:

MEDICAL, SURGICAL, OBSTETRICAL, AND THERAPEUTICAL.

RUPTURED RECTUS ABDOMINIS, INFLUENZAL;

OPERATION; RECOVERY.

BY W. BALGARNIE, O.B.E., M.B. LOND., F.R.C.S. ENG.

THE existing epidemic of influenza has been so fruitful of new symptoms and complications that any case of fresh clinical interest may well be recorded. Such a case occurred under me in a well-known preparatory boys' school in Hampshire.

The school assembled on Jan. 17th, and on Jan. 22nd I was called to see a boy who had not been well since his arrival. I was at once struck with his colouring and gave a grave prognosis, although the symptoms of septic broncho-pneumonia did not manifest themselves until two days later. After running a varying temperature of 105° F. for ten days he died with all the cardinal symptoms.

Within a week every boy, 35 in number, had gone down with the disease. It ran a fairly acute course, but only three boys, including the one who died, developed septic broncho-pneumonia.

The most interesting of these was A. B., aged 11, a somewhat delicate boy. He was one of the first boys to go down, on Jan. 23rd, and his symptoms ran a normal course for the first six days; then he rapidly developed signs of septic broncho-pneumonia, with the usual symptoms and temperature at about the 104° level. His colour was of the heliotrope hue, but not profoundly so.

On Feb. 2nd he suddenly developed acute pain and tenderness in the iliac fossa, and a diagnosis of appendicitis was made. It was noticed, however, that the area of tenderness was most acute at the edge of the rectus. It was accompanied by vomiting. His septic and pulmonary condition was so grave that I advised his parents, who had arrived at the school, against operation. On Feb. 4th his condition was worse, so that I suggested that Lieutenant-Colonel Herbert French, R.A.M.C., should see him in consultation, which he did that night. His advice was to remove the appendix in spite of his condition, as an additional septic focus might be adversely turning the scale. The operation was postponed to the following morning, chiefly owing to the lateness of the hour and the remoteness of the school from efficient help.

The boy took the anæsthetic, most ably given by Dr. Speechly, of Winnipeg, very well. Fortunately it was an easy operation, for in spite of several interruptions owing to violent attacks of coughing the patient was only 15 minutes on the table. The para-rectus incision was fortunately selected, chiefly owing to area of most marked tenderness being in this region. On opening the sheath of the rectus the muscle was found to be completely torn across. Its condition was interesting: it was pulpy and friable under the finger, but there was no extravasation of blood.

In the exhaustive treatise on Influenzo-pneumococcal and Influenzo-streptococcal Septicæmia, by Colonel French and his colleagues, Major A. Abrahams and Captain N. Hallows, published in THE LANCET on Jan. 4th last, the post-mortem appearances of this lesion are very vividly described, and special emphasis is laid on the amount of extravasated blood.

The clinical features in this case that stood out most prominently were the great dilatation of the superficial veins of the abdomen and thorax, and, secondly, the total absence of bleeding during the operation, two swabs only being used. One generally expects to find one or two branches of the deep epigastric causing slight hæmorrhage, but in this case the total absence even of oozing seemed to suggest a thrombosis of the vessels. The appendix was found not to be grossly affected. There were two hæmorrhagic areas, and the mesial portion was dilated with fæcal contents.

The result of the operation was interesting. The patient slowly but steadily improved from that date. The temperature slowly climbed down, and though his lungs did not clear for about three weeks he never really looked back.

Colonel French and his colleagues have described 20 cases of ruptured rectus, all of which died, and others regard the symptom as of fatal import. If such be the case, the question might fairly be argued whether incision of the sheath and

relief of tension may have helped the recovery of the patient, for there is no denying the gravity of his condition at the time of operation. Again, is the condition more common than is realised? On looking back at the case of the boy who died, two days before his death he developed tenderness in the left rectus, but with no other symptom, such as swelling. The boy A. B. showed no signs of swelling in the rectus either.

The question can further be asked: In cases where ruptured rectus is suspected would an incision of the sheath under a local anæsthetic be helpful?

Winchfield.

CASE OF ACUTE APPENDICITIS; SUPPURATIVE PYLEPHLEBITIS; RECOVERY.

BY RICHARD A. BARLOW, B.SC., M.B., CH.B.GLASG.,
TEMPORARY SURGEON LIEUTENANT, ROYAL NAVY.

SUPPURATIVE pylephlebitis usually results from infection of some part drained by the portal system of veins, and may thus follow ulceration of the stomach, intestines, or gall-bladder, and has also occurred after operations for hæmorrhoids. In all cases of appendicitis the incidence is given by Rendle Short as 0·4 per cent.; in the numerous cases reported recoveries have been so few that prognosis has come to be regarded as almost invariably hopeless. Different lines of treatment attempted include ligature of the efferent veins of the appendix and exploration and drainage of the hepatic abscesses, if possible, and vaccines, but so far without marked success. The following case contains several features deemed worthy of note.

Notes of Case.

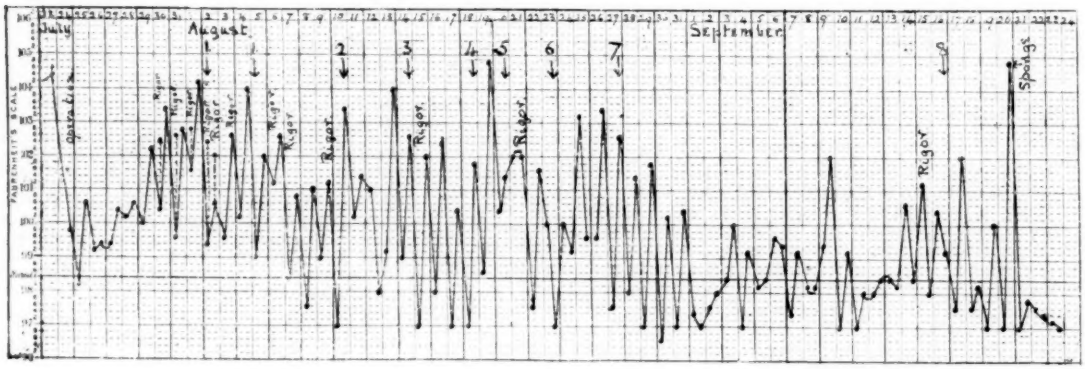
Patient, aged 27, admitted to R.N. Hospital, Plymouth. In 1912 he had an attack suggesting catarrhal appendicitis, but recovered completely and had no symptoms till July 21st, 1918. He then reported sick with acute abdominal "cramps" and constipation; no vomiting. Physical signs were slight, but tenderness in the right iliac fossa was definite. T. 104·4° F., P. 92, R. 32. On admission to hospital on evening of July 23rd T. 100° F., R. 28, P. 92. Nothing further was noted beyond the persistence of slight pain on pressure in the right iliac fossa; diagnosis of recurrent appendicitis. Palliative measures were taken as the condition was apparently subsiding. Next morning during examination the patient was seized with very violent abdominal pains. Immediate operative measures revealed a perforated gangrenous appendix lying to the inner side of the cæcum and firmly bound down to the posterior abdominal wall. Appendicectomy was performed with difficulty and the abdomen closed except for drainage of the pelvis and the site of the base of the appendix. Fowler's position was adopted and continuous rectal saline begun with a view to flushing out the peritoneum rather than on account of the general condition.

Four hours later a sudden and very alarming collapse ensued and patient was rescued only by vigorous treatment. Progress was then uneventful until the sixth day after operation, when he had a severe rigor with collapse; T. 102·4° (*vide* chart). This was repeated the next day. Free but offensive discharge from the tubes with a soft abdomen, no clinical signs in the chest, normal urine, and only slight tenderness over the liver left the cause of the above complication in doubt. Patient's general condition was again extremely grave as the rigors increased daily, and it was not until three days later that bile pigment appeared in the urine, conjunctivæ showed slight icteric tinge, and liver was noted to be more tender, but not enlarged. Free fluid was never detected in the abdomen. My diagnosis of portal pyæmia secondary to acute gangrenous appendicitis was later confirmed by Surgeon Rear Admiral Sir H. D. Rolleston and Surgeon Rear Admiral Sir G. R. Turner.

The prognosis was considered almost hopeless, as any further operative measures were not indicated or possible. I then decided to try intravenous eusol after Professor Lorrain Smith's method, which was commenced on August 2nd, nine days after operation (*vide* chart). Eight doses were given at varying intervals according to patient's general condition, and I was guided largely by the recurrence of rigors and the appearance of the conjunctivæ. After the first two doses there was marked improvement, and drainage tubes were removed 21 days after operation. There was no bile pigment in the urine at the end of the fifth week. At no time was there any ascites or enlargement of superficial veins. By the end of the ninth week temperature remained steady and wound was quite healed; shortly after this patient was discharged cured.

Remarks.

Apart from the rare occurrence of recovery from suppurative pylephlebitis the following points are of interest:—1. The sudden collapse four hours after operation was very suggestive of an embolus having been thrown off from the thrombosed vessels at the site of the lesion. 2. The paucity of clinical signs about the liver during the period of infection. Patient made no complaint throughout illness except during rigors. 3. The comparative bradycardia which persisted in spite of the extreme variations in temperature and the presence of obstinate constipation without distension, requiring daily enemata. 4. The treatment by intravenous eusol for this condition recorded for the first time and ending in recovery. This may not be entirely due to the eusol, but there is no doubt that the infection was steadied, the spread combated, and the generalised toxæmia so diluted and checked that recovery was made possible. This opinion is strengthened by the gratifying results we are obtaining in this hospital from the extensive use of intravenous eusol in cases of influenza, empyema, cancrum oris, otitis media, pyæmia, and septicæmia.



1, Eusol 90 c.cm., saline 90 c.cm. 2, Eusol 100 c.cm. 3, Eusol 100 c.cm., saline 80 c.cm. 4, Eusol 100 c.cm., saline 50 c.cm. 5, Eusol 100 c.cm., saline 100 c.cm. 6, Eusol, 20 c.cm., saline 20 c.cm. 7, Eusol 70 c.cm., saline 15 c.cm. 8, Eusol, 40 c.cm., saline 50 c.cm.

THE Somerset County Council has combined with Bristol and other authorities for the acquisition of Brentry Homes, to be used as a certified institution for mental defectives.

PRESENTATION TO A MEDICAL WOMAN.—Mrs. Sylvia Payne, M.B., B.S. Lond., O.B.E., commandant of the Torquay Town Hall Red Cross Hospital, has been presented with a Chippendale sideboard and carving table by the committee and staff of the institution.

Medical Societies.

ROYAL SOCIETY OF MEDICINE.

SECTION OF SURGERY.

A MEETING of this section was held on May 7th, Sir JOHN BLAND-SUTTON, the President, being in the chair.

The PRESIDENT read a paper on Missiles as Emboli, which appeared in our issue of May 10th, and gave a demonstration of specimens.

Carcinoma of the Appendix.

Mr. J. E. ADAMS read a paper on Carcinoma of the Appendix. Most surgeons would agree, he said, as to the rarity of the condition, though some American authors had stated that microscopical sections of large numbers of appendices, examined as a routine practice, had proved its occurrence in between 0·4 and 0·5 per cent. of the cases where operation had been performed for attacks of appendicitis. Deaver,[1] writing in 1914, stated that the number of recorded cases up to 1908 was 120, and he added that with increasing microscopical examination the condition had ceased to be a rarity. This might be so in America, but in this country such cases were still far from common, and the speaker could only trace four in the last 17 years at St. Thomas's Hospital, during which period over 7000 appendicectomies must have been performed. Microscopical examination of the organ was not undertaken as a routine practice, but such appendices did as a rule present macroscopical abnormalities, and when these were noticed the aid of a pathologist was usually invoked. One of these four cases was classified as an endothelioma, but for purposes of description he thought other authors had included these, and their inclusion among carcinomata was perhaps justified by the fact that the type which was most prevalent was the spheroidal-celled cancer occurring in young subjects, in a large proportion even before puberty. He was indebted to the comprehensive article on this subject in Deaver's book for many of the following details.

Age incidence.—Of Harte's recorded cases 54 per cent. were under 30 years of age, the youngest being only 5. Obendorfer discovered this lesion in the appendix of a child only 7 days old. Numerous cases had been recorded before puberty. Practically all these appendices were removed for attacks diagnosed as appendicitis, and the discovery of carcinoma was made by microscopical investigation.

Type of cell.—The vast majority belonged to the spheroidal or, to use an American term, basal-celled type of carcinoma. If columnar-celled cancer was found the average age was about 50, which accorded with the incidence of columnar carcinoma in other parts of the intestinal tract. The basal-celled growth was much less prone to produce metastatic deposits. The growth was rarely large and the classical type was often located in the tip of the appendix (90 per cent., according to MacCarty and McGrath). Other authors agreed that 75 per cent. of these growths occurred in the distal half of the appendix. The condition was slightly more common among females than males. Deaver stated that up to September, 1912, at the German Hospital, Philadelphia, 6327 appendices had been examined microscopically and 16 instances of malignant neoplasm were found. This gave an incidence of 0·25 per cent.

Malignancy.—It was stated that the majority of the cases of spheroidal-celled carcinoma occurring usually at the distal end and in young subjects were cured by appendicectomy alone. This type was characterised by slow growth, absence of early metastases, and rarity of recurrence after removal. A certain proportion of endotheliomata had been included in the recorded cases, and these characteristics applied essentially to this type of semi-malignant growth. In those cases occurring, like the common forms of intestinal cancer, later in life the malignancy was that of ordinary columnar-celled carcinoma.

Results of Simple Appendicectomy.

He had endeavoured to trace the St. Thomas's Hospital cases, all of which had been recorded by his colleagues in THE LANCET, in order to ascertain the results of simple appendicectomy.

[1] John B. Deaver: "Appendicitis," Heinemann, 1914.

Cullingworth and Corner[2] found a carcinomatous appendix at an operation in 1901, and recorded it three years later, when the patient, a woman of 33, was perfectly well. This was a spheroidal-celled carcinoma, and the patient had experienced two attacks of pain in the right iliac fossa, where a small solid tumour could be felt. Operation revealed a fibromyoma of the right broad ligament, close to, but not connected with the uterus, with some adherent omentum, and an appendix free from adhesions with a bulbous enlargement at the tip. The lumen of the appendix was obliterated by this growth, which was hard but appeared caseous on section, and a suspicion of tuberculosis was aroused. It was held that the fibromyoma rather than the appendix was responsible for the symptoms and physical signs. Efforts to trace this patient had been unsuccessful, so she could only be included among the three-year "cures."

In 1904 Battle[3] operated on a female, aged 14, where the appendix was removed after six attacks occurring at short intervals. No suspicion was entertained before operation that the condition was other than chronic inflammation of the appendix. When removed it was thought to be tuberculous; there was a bulbous tip, solid with growth, and a stricture in the lumen of the bowel in the proximal half. Sections of this appendix conformed to the spheroidal-celled type and the growth showed an extreme degree of invasion of the muscular coat. Correspondence with this patient had elicited the satisfactory reply that she was married and in perfect health. She had one child aged 5. Freedom from recurrence of intestinal carcinoma after the lapse of 14 years surely justified the use of the word "cure."

In 1905 Sargent[4] came across an appendix, in an abscess due to what was considered to be the first attack of appendicitis, which was enlarged and caseous on section. A preliminary diagnosis of tuberculosis was made, but microscopical examination revealed the structure of an endothelioma. The patient was a girl 12 years of age, who had been ill for nearly three weeks, with acute symptoms for 56 hours before operation. There was a large inflammatory swelling in the right iliac fossa, and the case was treated by incision and drainage, with immediate appendicectomy. Only the unusual appearance of the appendix caused a microscopical investigation to be made, and the child made a perfect recovery. No information could be obtained as to the present condition.

His own case was in all essential points precisely similar to that recorded by Battle. The patient was a girl aged 12, rather thin and nervous, with a history of "bilious attacks" for some years. In November, 1918, he was consulted about the illness from which the child was then suffering and the diagnosis made was appendicitis owing to the location of pain and tenderness in the right iliac fossa. Abdominal pain on previous occasions had not been referred to this region, and the child herself stated that the pain was "in a new place." The pain persisted in slight degree up to the date of operation in January of this year, when it was expected that an adherent appendix would be found. The appendix, however, proved to be quite free from adhesions but enlarged and bulbous near its distal portion for three-quarters of an inch. The proximal part was empty and healthy. Macroscopically the condition was taken for tuberculosis, as the lumen was obliterated and the mass yellowish white on section. Microscopically the growth was, like the above cases, spheroidal-celled carcinoma, with extreme invasion of the muscular coat and no clear evidence that it originated in the mucosa. Appendicectomy alone was performed at the operation, and in view of the generally favourable outlook in these cases no further surgical treatment had been advised. The child was now perfectly well.

Features of Interest.

The outstanding features of interest in these cases appeared to be:—1. The fact that spheroidal-celled carcinoma was by far the commonest type encountered in cases of cancer of the appendix occurring in young subjects. 2. That the disease affected the distal portion most frequently and that the tip of the appendix was particularly liable to attack. 3. That this part of the appendix was less liable to that irritation which was commonly held to be one of the factors in the causation of intestinal carcinoma. It was obvious that every portion of fæcal matter which left the cæcum and entered the appendix must pass over some part of its proximal end,

[2] THE LANCET, 1904, ii., 1340. [3] THE LANCET, 1905, ii., 291.
[4] THE LANCET, 1905, ii., 889.

but a large proportion of such irritant matter might never reach the tip of the appendix. 4. It would seem, therefore, that this particular form of growth belonged to what one might term the "unsuspected carcinomata," similar to that which was met with in the thyroid; in cases of which a lobe might be removed for enlargement, the diagnosis of malignancy being clear on account of the absence of colloid material and the profusion of irregularly multiplying cells. 5. It was possible that if vermiform appendices were all submitted to microscopical examination after removal the percentage of these cases of carcinoma would be found to be higher than at present appeared. It was doubtful, however, whether the percentage in this country would reach the high figure of 0·5 per cent. given by some American authors. 6. The fact that all these cases were taken for tubercle on naked-eye examination was interesting, and was proof of the rarity of carcinomata as well as the frailty of unaided surgical eyesight. It would certainly appear that accurate clinical diagnosis was not to be expected. 7. In Sargent's case there was apparently no evidence that the neoplasm caused the abscess, and he (the speaker) believed that absence of inflammation around the growth was usual in these cases. This was in accordance with the observation that they exhibited no ulceration of the mucous membrane, but rather obliteration of the lumen. 8. If the favourable prognosis after simple appendicectomy were correct we were justified in taking pride in such a simple cure for cancer. But it made one wonder how often such lesions occurred without giving rise to symptoms. Furthermore, recurrence of carcinoma was not unknown 10 or even 20 years after apparently successful removal by operation. No statistics were available as to the length of time these appendicular cancers had been observed to be free from recurrence or metastatic deposits. Of the three cases about which he had inquired only one had furnished any evidence, and this was entirely satisfactory. He intended to keep his own case under the closest observation.

Discussion.

The PRESIDENT said that the great difficulty arose from the fact that there were so few cases in which the subsequent history of the patient had been observed over a long period. The peculiarity of this type of carcinoma was its occurrence in young children. He had examined a number of appendices which he had removed and which showed a nodular appearance, but there was no further history of recurrence.

Sir HUMPHRY ROLLESTON said that in 1906 Mr. Lawrence Jones and he analysed 42 cases of primary malignant disease of the vermiform appendix, 37 of which (88 per cent.) were described as carcinomas. A distinction should be drawn between (*a*) the columnar-celled growths which probably were derived from the cæcum and were clinically malignant, and (*b*) the small spheroidal or polyhedral-celled growths, which were the characteristic form in the appendix, and though carcinomatous from the microscopical point of view were not malignant clinically. Both structurally and prognostically this form of appendix carcinoma resembled the group of cases of multiple primary carcinomas of the small intestine described by Bunting and also the basal-celled tumours of Krompecher, of which multiple growths had been recorded in the scalp. He knew of four examples of primary carcinoma of the vermiform appendix that had been detected microscopically in the routine examination of appendices at St. George's Hospital; in the first, published in 1900, the patient had some little time later, abdominal symptoms suggesting a recurrence, but was quite well in 1905.

In answer to a question by Mr. ADAMS, he said that these four cases occurred out of a total of under 1000.

MEDICAL SOCIETY OF LONDON.

The Annual Oration.

AT the general meeting of this society, held on May 12th, the annual oration was delivered by Sir JOHN TWEEDY, who chose for his subject

The Medical Tradition.

The air was thick, he said, with projects of reconstruction and change. He was doubtful whether any of the proposed changes would effect all the good expected of them, and felt sure that some would do no good at all. He believed that any change that restrained the liberty or lessened the responsibility of a medical man, or hampered the free play of his intellectual activities, would be detrimental to the authority and usefulness of medicine and prejudicial to the interests of public health and national welfare. In the war medical men of different nationalities reared under different educational and social systems had been able to coöperate because all alike inherited the same traditions of rational medicine. Whether medicine became "nationalised" or remained autonomous the personal character, moral endowments, and intellectual ability of individual practitioners would determine its influence and authority.

In considering the personal qualities of the medical man we might find all that was essential to our purpose in the writings of the ancient Greek physicians, and especially in those of Hippocrates, using the term in the generic sense. Medicine was always the same, and to become a great physician the same qualities were necessary to-day as formerly and the underlying principles of medicine were unchanged. The principle and the method were *observation* and *reasoning*. If reasoning was not preceded by observation it was likely to lose its way, while observation not followed by reasoning was not enough. The intelligence should supplement the senses and reason should supplement observation. The mind's eye perceived what was invisible to the bodily eye.

Hippocrates, Celsus, and Galen all counselled against the undertaking of cases which were incurable, but Avicenna was more in harmony with modern sentiment, advising that we should never abandon a patient, but up to the last moment should endeavour to soothe, not gambling with a life by powerful remedies or big operations where there was no well-grounded hope.

The Teaching of Hippocrates.

Hippocrates's classification of the causation of disease and of the nature and significance of symptoms still held good. The causes of disease were twofold: those which came from without and those which originated within; the manifestations were also twofold: the indisposition and the reaction of the organism in the struggle of the natural forces to overcome, destroy, neutralise, or expel the morbific agent. The natural powers were the healers of disease, and the physician the servant or minister of Nature. There could be no certitude in medicine; no physician could ever be sure of curing his patient, but he could be sure of employing all his knowledge and all his skill according to the established rules of his art. Hippocrates named six conditions necessary to become a skilled physician—natural talent, instruction by a competent master, a place favourable to study, education begun in youth, love of work, and long application. The first of these was the most important. Theory should be combined with practice; want of experience begot either timidity or rashness. The training of the medical student in the fifth century B.C. was varied and complete and comprised the study of medical writings, listening to set lectures or to the personal instruction of the master, and practical experience in the consulting-room and at the bedside. According to Hippocrates the physician should be well-mannered, discreet, and of good repute; wise in judgment, temperate, and self-controlled. Honourable in all his dealings, he should unite firmness with gentleness, and should avoid luxury and display, frivolity and levity. He should not be greedy of gain, but should accommodate his fees to the circumstances of his patient, and, if necessary, render his services gratuitously. He should think more of honour than of profit. Galen made similar remarks on professional remuneration.

Medical Ethics.

Hippocrates also inculcated friendly and confidential relations between members of the profession, and medical ethics were settled once for all by him. According to the Oath youths initiated into the profession swore to help the sick to the best of their power and judgment, to abstain from every evil, never to administer poison or give it to a third person, and never to give an abortive pessary; to be pure and chaste in their relations with patients and members of the patient's household, and always to observe the strictest silence respecting secrets learned in the exercise of their calling and even outside it. There were two kinds of secrets referred to—"trade secrets" and "secrets of trust";

the former had practically ceased to exist in medicine, the latter were inviolable except under the compulsion of a court of law. Of late years there was a tendency for the Legislature to encroach upon the principle of professional secrecy—e.g., the notification of disease. With regard to the production of abortion Hippocrates was ethically far in advance of the opinion of his day, for both Plato and Aristotle sanctioned the practice in certain circumstances. They were influenced by social, political, and economic considerations.

With Hippocrates, we should never forget that medical philosophy was essentially, apart from its other studies, an ethical study, and was intimately concerned about the ways by which it sought to attain its moral aims; and that he who in the right spirit devoted himself to the practice of medicine sought not his own, but engaged in the service of humanity.

Election of Officers.

The following officers were elected for the session commencing October, 1919.

President: Mr. V. Warren Low.
Vice-Presidents: Sir John Broadbent, Dr. D. Lloyd Roberts, Dr. F. J. Harvey Bateman, Sir Hugh Rigby.
Treasurer: Dr. J. Mitchell Bruce.
Librarian: Dr. A. F. Voelcker.
Honorary Secretaries: Mr. Donald Armour, Dr. W. H. Willcox.
Honorary Secretary for Foreign Correspondence: Dr. Herbert R. Spencer.
Council: Dr. S. H. Belfrage, Dr. E. Farquhar Buzzard, Mr. L. Vernon Cargill, Dr. Edmund Cautley, Mr. C. C. Choyce, Dr. L. Eliot Creasy, Dr. F. G. Crookshank, Dr. H. A. Des Vœux, Mr. T. Percy Legg, Mr. Hugh Lett, Dr. E. E. Lewis, Mr. C. Stormont Murray, Mr. C. J. Ogle, Mr. D'Arcy Power, Mr. L. B. Rawling, Mr. C. Ryall, Mr. Percy Sargent, Dr. H. Batty Shaw, Dr. P. M. Smith, Sir StClair Thomson.

LONDON ASSOCIATION OF THE MEDICAL WOMEN'S FEDERATION.—A meeting of this association was held at 11, Chandos-street, on May 6th, Lady Barrett, the President, being in the chair.—Dr. Florence Stoney showed a case of Psoriasis of 13 years' duration. She said that for six weeks X rays had been vigorously applied, with the result that the disease was completely cured where sufficient treatment had been given, three or four applications being necessary. No other treatment had done any good, except that the psoriasis had once completely disappeared when under treatment for rheumatic fever.—Dr. D. A. Stepney gave an account of two and a half years' experience in Russia during the war, where she had charge of a hospital for refugee women and children provided by the National Union of Women's Suffrage Societies. As the war conditions altered the English nurses were sent home, and the municipality of the town, Kazan, took over the hospital, asking Dr. Stepney to continue her work in it with a Russian staff. She saw the changes caused by the Revolution, the entry of Trotsky with his army into the town, and the fighting there between the Czecho-Slovaks and Bolsheviks, when, a general massacre being feared, 40,000 people left the town in one night. After many adventures and great privations Dr. Stepney reached Finland, and so returned to England in December, 1918.

SOCIÉTÉ DE BIOLOGIE, PARIS.—The following is a summary of some of the papers read at the meeting of this society held on May 3rd:—

M. Favre et A. Civette.—The Spirilla of Venereal Vegetations.

Après fixation, d'après Rigaud, et chromisation prolongée l'hematoxyline au fer montre dans les végétations vénériennes en pleine poussée de très nombreux spirilles. Ces spirilles siègent dans la couche épidermique. Si celle-ci est mince, ils arrivent presque au contact du corps papillaire, mais n'y pénètrent jamais. On les trouvé là, entre les cellules et dans les cellules elles-mêmes. Ces parasites ont peu d'affinité pour l'argent. Ceci peut expliquer bon nombre de résultats négatifs invoqués comme autant d'arguments contre l'hypothèse qui attribuerait une valeur étiologique à ces spirilles.

Pierre Paul Levy.—Filaments Resembling Spirochætes in Normal Urine.

Il doit s'agir d'un spirochéridé vivant en saprophyte dans la vessie et peut-être dans le rein. Il serait interessant de vérifier sur des coupes de reins sains si cette hypothèse est fondée et d'établir si ces micro-organismes ne joueraient pas un rôle dans l'étiologie des néphrites chroniques.

G. Delamare.—Broncho-pulmonary Spirochætosis.

Etude de 35 cas de cette affection chez les Annamites, Arabes, ou Malgaches. Les spirochétes sont polymorphes de 6 à 15 μ en moyenne. Ils se rattachent au genre spironema. Dans les déterminations intestinales d'infection, les spirochètes prennent le dessus. Dans les affections buccales ou pharyngées, c'est habituellement le *B. fusiformis* qui est prédominant.

Reviews and Notices of Books

Orthopædic Effects of Gunshot Wounds and their After Treatment. By S. W. DAW, M.B., B.S. Lond., F.R.C.S. Eng., late Surgeon in Charge of Orthopædic Beds, Second Northern General Hospital, Leeds General Infirmary; Captain, R.A.M.C.(T.F.). With a Foreword by Major-General Sir ROBERT JONES, C.B., and an Appendix on Functional Disabilities by Dr. W. CUTHBERT MORTON, M.A. With 46 illustrations. London: Henry Frowde and Hodder and Stoughton. 1919. Pp. 242–xi. 7s. 6d.

Mr. Daw's contribution to the series of Oxford War Primers is an opportune one; for while happily the inflow of recently wounded men has ceased, a long time must pass before the need of military orthopædic treatment ceases. As Sir Robert Jones says in his foreword, "the country will shortly be flooded with men who deserve and will demand the most skilled treatment that the nation can afford." Practitioners all over the country will have charge of the treatment of these pensioners, and their task will be made more easy by the help of such books as this one, which places the experience gained in special hospitals at the disposal of all, in clear and concise terms without circumlocution.

In the introductory notes the general principles of the treatment are discussed. We commend especially the sound sense of the author's remarks in this section on the bloodless treatment of stiff joints. Experience in the last four years has caused surgeons to change their opinions as to the danger of stiff joints following on prolonged immobilisation. This danger, which was found to be very small in the practice of surgery before the war, has proved to be a very great one owing to the widespread existence of sepsis. The value of educational workshops as a means of improving function has been proved again and again, and by such means it has often been shown that function may be restored without anatomical cure.

About a third of the book is devoted to the consideration of injuries of peripheral nerves, the treatment of which is discussed and well illustrated. The opinions expressed will commend themselves to all who have had much to do with such injuries, and the advice as to when to operate and how is sound and judicious.

There is an appendix of half a dozen pages on Functional Disabilities by Dr. Cuthbert Morton, which contains many useful hints in small space. Throughout the book the illustrations are clear and helpful.

The Human Machine and Industrial Efficiency. By FREDERIC S. LEE, Ph.D., LL.D. London: Longmans, Green, and Co. 1919. Pp. 120. 5s.

WHEN industrial efficiency is under discussion a comparison between the human body and an inanimate machine has become a custom; and the comparison is valuable, though trite, since it enables truths to be brought home regarding neglect of the delicate human machine, while attention and study are devoted to the principles of mechanics. Therefore the name chosen by Professor Lee for his small manual usefully challenges attention. He states four simple postulates: (1) workers should be qualified for the work that they are to do; (2) workers should produce a daily output in accordance with their individual capacities for work; (3) workers should maintain their working power from day to day and from week to week; and (4) workers, once they are proved competent, should be retained; and then proceeds to show how industry has neglected them to its own injury, and how they can be simply secured. Written during the pressure of war-time, this book presents an excellent summary in readable form of present knowledge in regard to human efficiency in industry, and how it can be tested; and all interested in the future of industry, upon which year by year the community at large is becoming more and more dependent, should read it.

The Great War was won and lost as much by the skill and application of the munition workers behind the armies as by the deeds of the fighting forces; and in future times of peace racial predominance must go to the nations most efficient in industry. Should the medical profession lightly

think this no concern of theirs, let them read what Professor Lee has to say, and has said so clearly; and they will appreciate how they can help, and must be called upon to help managers of labour with advice concerning the human machine, concerning whose work they are accepted to be qualified engineers. If they do not keep themselves abreast of modern knowledge on this important subject they will fail in their duty, not only to their immediate clientèle but also to the community at large. The choice of workers for different processes; the use of rest periods; the relation of work to sickness; the respective value of male and female labour, of night work and day work; the importance of suitable food in factory canteens; the physiology of the labourer; each and all are of everyday importance to the practitioner in an industrial district.

Professor Lee pays tribute to the work done recently in this country, and also tells us of the progress made in America. Clearly a new science of applied physiology is opening out—of physiology as applied to industry. In this country, as in America, State Boards have been constituted to further research, and their publications are shortly to be expected; but those who do not now familiarise themselves with the alphabet of the subject will soon find difficulty in understanding it as it develops, and the development is likely to be rapid. This book provides an opportunity which should be taken; for now more than ever before we should be prepared to answer in the affirmative Bishop Berkeley's query, "Whether we should not cast about, by all manner of means, to excite industry, and to remove whatever hinders it? And whether everyone should not lend a helping hand?"

Prothèse Fonctionnelle des Blessés de Guerre. Troubles Physiologiques et Appareilage. Par le Dr. DUCROQUET, Chirurgien Orthopédiste de l'Hôpital H. de Rothschild. With a Preface by Professor AUG. BROCA. Paris: Masson et Cie. 1919. Pp. 233–ii. 5 fr. + 10 per cent.

Dr. Ducroquet is well known as a writer on artificial limbs and orthopædic appliances. In this book he has produced a very useful short guide to the study of the physiological and pathological mechanics of joints and muscles and an analysis of gait, first, in the normal subject and, secondly, in the deformed. The question of the position of centres of movement of normal joints becomes a very practical one when the knowledge acquired is applied to the design of artificial limbs and orthopædic appliances. Right or wrong situation of a joint means comfort or discomfort to the wearer of the appliance. Dr. Ducroquet's series of kinematic photographs of normal gait show clearly the various phases of movement. These have been shown before by other writers, and elaborate analyses of the series of photographs obtained by various methods have been made. Nevertheless, the publication of these kinematic pictures in an accessible form and with short and clear comments is welcome. In addition, the original pictures of abnormal gait are interesting and valuable. The objects aimed at in the application of corrective, retentive, and supporting appliances are explained, and the best ways of designing appliances so as to attain these objects are discussed by Dr. Ducroquet with judgment. He treats also of instruments for ankylosis, pseudarthrosis, and fracture briefly and clearly, and also of spasmodic functional deformities, for some of which he recommends the operation of arthrodesis which is known by the name of Ducroquet-Launay.

The many diagrams and illustrations and their satisfactory explanation make this book peculiarly useful, but the usefulness would be increased by the addition of an index.

Gynæcology for Nurses and Gynæcological Nursing. By COMYNS BERKELEY, M.A., M.D., M.C. Cantab., F.R.C.P. Lond., M.R.C.S. Eng., Obstetric and Gynæcological Surgeon to the Middlesex Hospital. Third edition, entirely rewritten, with 38 illustrations. London: The Scientific Press, Ltd. 1918. Pp. 253. 6*s*.

THE good points of this volume are very many. Though written primarily for nurses who are doing gynæcological work, it is nevertheless a book which should prove very useful to midwives. We can hardly imagine a better simple exposition of the pathology of gynæcological diseases, and if the midwife will study pages 34 to 94 carefully much of the monotony of her daily round will be turned to real interest, and she may become more useful in recognising disease among her patients while it is yet in its early stages, and in realising the importance of seeking medical advice for them. The chapters on venereal disease are useful and are easy to understand.

Many nurses will wish to possess the volume for the interest of Part II. alone, and those who have been trained for some years will appreciate the clear exposition of immunity and of immunity reactions from the curative and diagnostic standpoints, of which most midwives have but a vague idea. For those who have to bring all their influence to bear on their patients in order to persuade them to have their children vaccinated it is essential that they should have a clear idea of the processes which they advocate.

Part III. may seem to be of less practical use to the midwife, unless she is working in a hospital with a well-fitted theatre, but we would recommend her to study it closely, if only as a stimulus to her to perfect her technique in the conduct of her ordinary cases to the utmost limit that the difficulties of circumstances and environment permit.

Aids to the Analysis of Food and Drugs. By C. G. MOOR, M.A., F.I.C., and WILLIAM PARTRIDGE, F.I.C. Fourth edition. London: Baillière, Tindall, and Cox. 1918. Pp. xii.–268. 4*s*. 6*d*. net.

FIRST issued over 20 years ago, this book has proved very useful to assistants and students, chiefly in the laboratory of the public analyst. Both authors have had considerable experience in this department of public health work, and so write with a practical knowledge of the analytical procedure commonly required under the Sale of Food and Drugs Act. Further editions have been issued as developments in analytical practice have appeared. Revisions have accordingly been made from time to time which are more marked in the present than in any previous issue. The events of the war, for example, have led to new food regulations and orders, notable amongst which is the order as to the alcoholic strength of spirits and beer, and many changes have been made in regard to the official standardisation of pharmaceutical preparations. All these matters have been dealt with, and for the first time the question of food accessory factors is noticed. The book has been well brought up to date and should therefore continue its usefulness.

Aids to Histology. By ALEXANDER GOODALL, M.D. Edin., F.R.C.P. Edin. London: Baillière, Tindall, and Cox. Second edition. 3*s*. net.

THE first edition of this little manual was reviewed in our issue of Jan. 27th, 1912. Certain alterations and additions have now been made and the price increased by 50 per cent. This is an unpretentious little book and more readable than many others of the series.

Edible Oils and Fats. By C. AINSWORTH MITCHELL, B.A., F.I.C. With illustrations. London: Longmans, Green, and Co. 1918. Pp. 159. 6*s*. 6*d*. net.

IT is interesting to get an insight, such as is given in this book, into the technical methods involved in the preparation of oils and fats for the purposes of food. The subject, of course, reached a great importance during the shortage of fats, and particularly animal fats, due to war operations. The manufacture of margarines has been extended on a very large scale, and interesting particulars are given here as to the raw materials employed and as to the processes involved in transforming these into attractive edible products. A curious omission in this connexion, however, is that no reference is made to the important differentiation between animal and vegetable fats—that while the former contain food accessory factors, in the latter they are missing. From Mr. Mitchell's account of the processes used in the refinement of vegetable oils, involving the use of steam, alkalies, tannin, and other materials, it is doubtful whether any vitamines would survive the ordeal. Butter, of course, is prepared on much simpler lines, and no step in the process of churning would be likely to interfere with the fat-soluble food accessory. It would be interesting to determine whether, after all, the raw vegetable oils before refinement contain vitamines ultimately destroyed by the physical and chemical processes used to bring the raw material into suitable edible form. Apart from technical matters, the book gives a good outline of analytical methods adopted in the examination of edible oils and fats.

THE LANCET.

LONDON: SATURDAY, MAY 17, 1919.

Voluntary Hospitals and the Work of the Almoner.

THE annual meeting of the British Hospitals Association is being held to-day, Friday, May 16th, at the London Hospital, under the chairmanship of Lord KNUTSFORD, when the meeting will be addressed by Sir NAPIER BURNETT on the Relation of Voluntary Hospitals to the State. A pronouncement from the Association at this juncture may be of considerable value, for the part to be played by the voluntary hospitals under the new Ministry of Health is to some extent full of uncertainty. The Council of the Association circulated in the autumn of last year a well-arranged statement of the position as they conceived it, setting out the arguments for the maintenance of the voluntary hospitals on their present basis—one from which they administer in direct alleviation of medical needs charity which is supplied by those who can afford to give it; but while it is understood that the new Ministry of Health does not intend to interfere directly with the voluntary system of hospital support and administration, it is certain that there is in the working of this system a lack of economy in many important directions. Those most confirmed in favour of the voluntary hospital system as it at present exists recognise its limitations by postulating that Government grants should be made towards the cost of some of the work, especially to assist the hospitals to focus their attention on the education of the future doctor. There is, of course, a great difference between Government grants in aid of medical education and that direct municipalisation of our charitable institutions under which lay administrators might be given the responsibility of managing hospitals from the pathological point of view. From this latter ridiculous position it is the duty of all medical men to see the voluntary hospitals saved; which does not mean that any unwillingness should be shown by medical men to coöperate with representatives of the public in all that concerns the institution. The public should be helped to understand that in the preventive and other machinery which exists to deal with disease medical work must suffer if all initiative is taken away from the medical profession, and hospitals cannot be managed unless the medical staff has a proper voice in the management; but this does not imply that a big general hospital, while drawing its support from the voluntary contributions of the public, should not be willing to debate all and every question with that public. While within the hospital every step must be taken by the medical administration to keep the institution in the van of research, raising the patterns of nursing and medical education, outside the hospital the public should understand the institution as the consultant authority, not as a substitute for the domestic doctor.

One of the most difficult problems of the voluntary hospital system at the present moment is the right use of the out-patient department. Modern methods of diagnosis and treatment, on the one hand, and recent legislation with regard to State medicine, on the other, have gone far towards changing the point of view in the out-patient department; and it would be no exaggeration to say that the position of the lady almoner is one of the strategic points in the situation. The April number of the *Edinburgh Medical Journal* contains several pages of tentative editorial notes on "trained hospital almoners," a movement which has not hitherto made much progress north of the Tweed. The *Hospital Gazette* for the same month also contains a full report of an address given to the Incorporated Association of Hospital Officers by Miss A. E. CUMMINS, whose long experience entitles her to speak with intimate knowledge on this subject. To the Royal Free Hospital belongs the distinction of having started the almoner system in London. The scheme owed its inception largely to the foresight of Sir CHARLES LOCH and the financial support of the Charity Organisation Society. It began with the two-fold aim of stopping abuse and preventing misuse of the out-patient departments of the voluntary hospitals. This rather negative attitude seems strangely inadequate to those who are conversant with the almoner's work at the present day—a work which is in the best sense of the word constructive and curative. Fourteen years ago the almoner had to justify her existence, now she is looked upon as a valuable branch of hospital organisation. Indeed, the almoner has gone a long way towards establishing the modern out-patient department in its true position—viz., that of a social welfare department, in which the patient is not merely sent off with 14 days' medicine and a host of accessories in the shape of liniment, lotion, and plaster, but is helped to tackle the difficult questions of housing, food, and employment, which have so largely contributed to the causation of his illness. The almoner "stands by," in the nautical sense, ready to help any patient whose craft has got into rough waters. Those who are accustomed to dissect hospital accounts, and who expect direct returns for money spent, may at first sight doubt the wisdom of an increasing expenditure in the almoner's department, but if the sum of the hospital's services to the nation could be added up it would be found that this social service had been of no small account.

It is, unfortunately, true that the establishment of every new department brings fresh financial difficulties to the already over-burdened hospitals, and the almoner's office is no exception. But the voluntary hospital system is on its trial to-day, and its ability to deal with modern problems will to a large extent be a measure of its efficiency. One of the most urgent questions of the moment is how best to link up the voluntary hospitals with

the national scheme of health administration—school care committees, infant welfare centres, Local War Pensions Committees, and the various other State organisations which modern industrial conditions have imposed upon us. Here the almoner's department is doing a work of great value, and it is not surprising that for the moment the demand for trained almoners exceeds the supply. The Hospital Almoners' Council has set up a standard of training which takes a minimum of 18 months. It comprises practical work in the out-patients' department under an experienced hospital almoner, theoretical instruction in social subjects, elementary hygiene, and physiology, and practical instruction in Poor-law, charitable, and various State institutions. Certain hospitals have judged it best, in the training of the almoner, to proceed along lines adapted to their own peculiar conditions, and more experience on all sides will be needed before an ideal scheme can be evolved. As a matter of fact, it is the person rather than the precise catalogue of duties that matters, and that is going to matter still more in the future. With the almoner above and beyond all training is the question of human personality. A successful almoner must possess exceptional gifts apart from training.

The Radium Institute.

THE Radium Institute has been hampered, like many other forms of medical activity, by the difficulty of maintaining a full staff during the war, but now with an approach to a return to peace conditions we may hope that it will be possible to carry on the work with less difficulty. The annual report for 1918, which has just been issued, is an interesting and promising record. The need for a pathological research department at the Institute has been felt for a long time, but it was not possible to find suitable officers during the war, with the enormous demand by the army on our pathologists. Now the committee has appointed Dr. J. C. MOTTRAM, formerly of the Cancer Department of the Middlesex Hospital, as director of a chemico-physical laboratory, with Mr. J. R. CLARKE as his assistant. This is a very definite advance in the scientific study of radium, whose behaviour, both in natural history and in medical happenings, requires intensive study.

The deeds of the Institute during the past year appear in the report in clear and modest terms. In the report for 1917 chief attention was devoted to the subject of malignant disease, but the utilities of radium in a more extended sphere of therapeutics are now dwelt on. As far as malignant disease is concerned, it is worthy of note that it has been found better in certain cases to apply for a short time an amount of radium much greater than would have been thought safe a year ago. The beneficial results are more rapid in their appearance and more permanent than those which follow upon prolonged exposures to much smaller amounts. This effect is best seen in lymphadenoma, lymphosarcoma, and mediastinal sarcoma, but the use of these massive doses is almost invariably followed by great systemic disturbance; the patients soon suffer from languor, exhaustion, and nausea, or even vomiting, and sometimes there is pyrexia. These symptoms are attributable to the occurrence of an auto-toxæmia. The use of emanation tubes has been notably extended, and they have been found specially convenient for treating inoperable nodules when situated in positions where treatment by external applications is impossible. For the rest the report follows the lines of previous records in the matter of malignant disease, while its chief interest lies in the accounts of the treatment of non-malignant conditions. There is a widespread idea amongst the public that radium is only of use in the treatment of malignant growths, and many medical men seem to share this opinion, though the evidence to the contrary lies before them. Lupus yields rapidly and with good results; warts and granulomata can also be successfully treated, and many affections of the skin are materially improved by means of radium, though the treatment is usually reserved for cases which have not responded to ordinary therapeutic measures. It is true that in cancers and similar tumours radium is often our only resource, but there are many simple tumours and other morbid conditions which respond readily to radium, while little can be done for them by other therapeutic measures. There are two affections which show much benefit from the action of radium and which have been responsible for an enormous amount of misery, as well as for a direct and sinister influence on the birth-rate—these are uterine fibroids and chronic metritis. In these the main symptoms, menorrhagia and metrorrhagia, prove very amenable to treatment by radium, even though repeated operation and drugs have failed. Here there is clearly a large field for future work, and if the view taken by the report of the Institute is correct we ought soon to have more general recourse to the treatment and a substantial amount of experience on which to rely in recommending radium. The war has afforded a number of interesting examples of the value of the application of radium. The best results were obtained with scars; these were softened, and in this way movements which before were impossible owing to the scars were rendered easy, and fibrous adhesions were loosened. Unfortunately the pain associated with scars did not yield to treatment.

The Radium Institute has thoroughly justified its existence; but those who have appreciated rightly the work it has already accomplished feel sure that very much more will be done in the future. Year by year, as experience increases, the field open to radium treatment increases also, and the methods of use become more clearly defined. The rôle of radium, we feel sure, will be far wider in the future than it is now, and we welcome the intention to prosecute scientific research in the many directions which are sure to invite the attention of the chemico-physical laboratory. One closing remark—much of the work done at the Institute is entirely gratuitous, some 65 per cent. of the patients making absolutely no payment. It is clearly right that the Institute should be available to those who can afford to pay as well as to the poor, for few private practitioners are in a position to obtain the use of the large quantities of radium which are at the disposal of the officers of the Institute.

Annotations.

"Ne quid nimis."

WOMEN AND THE MEDICAL SOCIETY OF LONDON.

THE law of the Medical Society of London making it inadmissible for women to be Fellows of the society or visitors at its meetings dates from the year 1877, when the arriving possibility of the entry of women into the medical profession raised apprehensions which are of no more than historical interest now. A resolution brought forward by the council of the society to delete this law came before the general meeting of the society on Monday last, but was not put to the vote, as an amendment confirming the lenient practice of the last few years in admitting ladies to the meetings while continuing to refuse them full membership was passed by a small majority. In view of the great interest evinced in the discussion and the lateness of the hour the amendment was not put as a substantive motion, but the discussion upon it was adjourned until a later occasion at the discretion of the President. A feeling was strongly expressed by some of those who spoke in favour of the amendment that as women maintained their own exclusive medical societies and gatherings, it was desirable to retain one metropolitan medical society in which men alone were eligible to the status of membership. Some speakers did not hesitate to claim the sanction of time and usage in favour of regarding the Medical Society of London as a social club for medical men; and others invoked the support of the Founder in their exclusion of ladies. But it may be questioned whether a learned society is wise in elevating social intercourse above learning, and although Lettsom's view on a subject which could not have presented itself to him cannot be certainly ascertained, he was himself a member of a religious society which had already for a century placed their women members on a level of religious and social equality. Sir John Tweedy's learned oration on the Medical Tradition which followed the discussion opened by an allusion to the heated medico-political questions of the day, and occasioned a spontaneous outburst of mirth at the unconscious appropriateness of his remarks to what had gone before. Mirth soon gave place to a participation in the orator's quiet enthusiasm for a high standard of medical ethic and practice, in the spirit of which the policy of the society in regard to the admission of women will readily find its right solution.

THERAPEUTIC PULMONARY TRAUMA.

IN our correspondence columns there have been lately described and discussed cases of clinical betterment after lung-puncture, exploratory or of special purpose, in pneumonia. A recent number of a foreign periodical,[1] which has just reached this country, contains a short paper which those responsible for the above discussion would find interesting. The editor, Schröder, relates three instances in which decided and valuable improvement followed an unsuccessful attempt to induce artificial pneumothorax in pulmonary phthisis. The attempt was made by Brauer's method of incision, and after adherent pleura had been encountered, in several places the cannula was used as a dilator, although fruitlessly. In all three cases a sharp dry pleurisy on the affected side followed this procedure; and soon passing off, seemed to lead directly to disappearance also of the serious symptoms (such as pyrexia, cough, and expectoration) of the original disease; so much so that the unsuccessful attempt at lung-collapse seemed to have done the patient quite as much good as a successful one would. This clinical amelioration was apparently based upon an increased tendency to fibrosis in the diseased parts of the lung, especially of the cavitation which was always present. Intermissions certainly occur in the course of ordinary consumption, caused by the supervention of pleurisy with effusion, which have been attributed to the consequent immobilisation of the lung, or to the provision of "antibodies" by the exudate, or to local lymphocytosis. In cases of the present kind, however, the second cause is obviously absent, and the first fails to a great extent. For an explanation of the patient's improved state, which follows an increase in pulmonary fibrosis, Schröder is inclined to invoke pleural irritation; quoting Kaufmann's experiments on dogs, the deduction from which was that an aseptic pleural stimulus caused the formation of fibrous tissue not only in the two layers of the pleura, but also in the interstitial substance of the lung. And he purposes in future, after an unsuccessful pneumothorax induction, to inject between the partially separated pleural layers a few cubic centimetres of a sterile 0·5 per cent. solution of silver nitrate.

[1] Internationales Centralblatt für die gesamte Tuberkulose-Forschung, XIV. Sonderheft über Literatur zur Lungenkollapstherapie, Feb. 25th, 1919.

THE PROBLEM OF DISABLEMENT.

THE discussion at the Hunterian Society last Tuesday evening on the Problem of Disablement, opened by Dr. R. Fortescue Fox, afforded opportunity to Dr. J. Fletcher Porter, speaking for the Director of Medical Services at the Ministry of Pensions, to give figures indicating the extent of the problem. Since August, 1914, the number of pensions granted for disablement of 20 per cent. or over has been about 700,000, the total annual cost of which to the nation is some £80,000,000. 67,000 men are receiving full treatment allowances. The ratio of men who are being trained for a new occupation is a small one, the impression still being widely prevalent—so the President, Dr. W. Langdon Brown, stated—that a man's pension is reduced in proportion to what he is able to earn. Dr. Porter reiterated the statement, already made several times on behalf of the Pensions Minister, that examining boards are expressly prohibited from even inquiring what a pensioner is earning, assessment being made on the grade of disability alone. He gave the welcome information that pensioners are to be withdrawn as soon as possible from the out-patient departments of general hospitals, where their presence clogs the working of consultative medicine, and indicated that the projected 150 orthopædic centres up and down the country are almost an accomplished fact. Granted, then, that at last efficient treatment and training are to be offered to the disabled ex-service man, it remains to be seen if his mental inertia, variously described as sloth, natural laziness, hospitalisation (and probably a product of these and of many other factors such as the devastating dullness of modern industrial life), will prevent his acceptance of what is offered. Dr. Fox suggested that the increasing

difficulty of finding a livelihood since the armistice was signed is already making disabled men keener to qualify for remunerative work. The Village Centre at Enham, which offers treatment and training under attractive conditions, opens its doors next week and will be a test case of the desire of disabled men to rebuild their lives under medical guidance.

CHEMISTRY AT CAMBRIDGE.

THE noble gift to the University of Cambridge of 200,000 guineas for the endowment of a chemical school is pleasing and practical evidence that the representatives of British industry are beginning to realise the importance of chemical science in education and in national affairs. There obviously must be many industries whose returns have been largely expanded by the demands of the Great War, and in no better direction could the surplus incomes gained be used to promote scientific training, particularly in its application to industrial developments, than by the endowment we announce. At the meeting of the Senate of the University held on Tuesday last the Vice-Chancellor stated that Sir William Pope, professor of chemistry, had received a letter from Mr. R. Waley-Cohen, in which he declared with pleasure that the British oil companies had agreed to join together in a scheme for endowing a chemical school at Cambridge, the total sum for this purpose representing 200,000 guineas. Of this the Burmah Oil Company, the Anglo-Persian Oil Company, and the Anglo-Saxon Petroleum Company agreed to contribute £50,000 each. A further sum of £50,000 has been promised by Lord Cowdray and the Hon. Clive Pearson between them, and Mr. Deterding has offered to give a personal contribution of his own of £10,000, raising the sum of £200,000 to the sum of 200,000 guineas. This is a splendid gift, and one which we hope foretells the attitude of our great industries in general towards scientific training.

ATYPICAL RABIES.

AT a meeting of the Society for German Physicians in Prague on Jan. 10th[1] Bergh stated that during an outbreak of rabies in the Ukraine more than 22 soldiers who had been bitten by mad dogs were admitted to the garrison hospital at Lemberg after preventive inoculation. This was commenced on the second to the fourth day, and only one man, who had been bitten on the nose and right cheek, subsequently developed rabies. The first symptoms, which consisted of fever, headache, and anxiety, appeared on the day of the eighteenth injection, and six hours later the disease became fully developed. Psychical symptoms predominated in the form of an anxiety psychosis, at times amounting to maniacal attacks, and were accompanied by frequent and severe spasms of the muscles of deglutition and respiration, anarthria, complete insomnia in spite of large doses of chloral, and later disorientation. All the other symptoms of rabies were present except salivation, generalised convulsions, and paralysis. Death took place within 48 hours after a severe attack of hæmorrhagic vomiting. The necropsy showed moderate hyperæmia of the brain, a few small hæmorrhages in the brain substance, and a large number of small hæmorrhages throughout the mucous membrane of the œsophagus, stomach, and small intestine. Histologically, Negri bodies were found in great abundance in the cornu Ammonis on both sides, but were less numerous in the cerebral cortex and basal ganglia in the medulla and completely absent in the cord. Bergh attributed the severe and rapid course of the disease to the facial lesion, in consequence of which the process was confined to the brain and no paralysis developed. The extensive hæmorrhages in the mucous membranes were to be explained either by an extraordinarily weak resistance of the individual to the rabies virus or to the frequent and severe spasms of the muscles of deglutition and respiration.

[1] Wien. klin. Wchnschr., 1919, xxxii., 244.

BLOOD VOLUME AND RELATED BLOOD CHANGES AFTER HÆMORRHAGE.

OUR knowledge on the changes produced in the blood and circulatory mechanism by hæmorrhage and the subsequent restoration of the circulation is in a state of rapid development. The war has afforded abundant opportunity for study of these matters, to which our columns have frequently borne witness. An important piece of work upon this subject by O. H. Robertson and Arlie V. Bock, of the United States Army, is published in the February number of the *Journal of Experimental Medicine*. Blood-volume determinations following hæmorrhage, made by the vital red method, show a surprising reduction in the total blood bulk. Not infrequently cases reached the base hospitals with a diminution of volume to 60 or even 54 per cent. of the normal. What is significant is that, even so, the hæmoglobin percentage may show no reduction, indicating that observations which fail to take account of the blood volume changes may give a wholly false impression of the degree of blood loss. Blood-pressure changes give some assistance in estimating loss of blood volume. Though the pressure may sometimes be maintained even with a considerable loss of blood, low blood pressure has been found to be so constantly associated with lessened blood volume that a relationship between the two may be inferred. The writers, in fact, suggest that when the pressure is below 95 mm. the blood volume is probably under 70 per cent., and if 80 mm. or less the volume is probably 60 per cent. or less. By means of the blood volume and hæmoglobin per cent. the actual extent of blood loss could be determined, and it was found that severe cases of anæmia showed a loss of as much as five-sixths of their total hæmoglobin. Accompanying these changes seen in severe anæmia there occurs a well-marked difference in hæmoglobin per cent. between capillary and venous blood, indicating capillary blood concentration, a condition often observed also in shock, and due to circulatory failure. The body attempts to counteract the loss of blood in two ways—by increasing the blood volume by means of withdrawing fluid from the tissues, and by new red cell formation. The one process, however, seems to depend upon the other. If the added fluid from the tissues dilute the hæmoglobin beyond a certain critical point such addition is automatically arrested, and only recurs when further red cells are passed into circulation; and conversely, increased blood production, except in the very anæmic cases, seems to depend largely upon the restoration of the blood volume.

Treatment in the light of these observations is indicated upon the following lines. It is suggested

that in circumstances of battle the soldier has often had little water to drink. He has perspired freely, too, so that his fluid reserves in the body are already at a low ebb when he is wounded. The shock still further increases fluid loss. So that it is important to supply abundant water at as early a stage as possible after the hæmorrhage. Later, the blood restoration can be artificially aided in three ways. By transfusion of blood: this is indicated when the hæmoglobin is reduced to 25 per cent., for besides supplying new oxygen-carrying cells it actually stimulates increase in blood volume. By injection into the blood stream of a solution of gum acacia on the lines suggested by Professor W. M. Bayliss: this acts similarly to transfusion, but both only partially restore the blood volume. Lastly, and this method the authors strongly recommend, by putting the patients upon a large fluid intake by mouth and per rectum. This procedure has been found promptly and greatly to increase the blood volume with beneficial effect. The result of this treatment is to cause a progressive rise of blood pressure, an increased blood volume, and a more even distribution of red cells, and these changes were often well marked after only two or three hours of the treatment.

A CANCER DISTRICT IN FRANCE.

WHILE attached to the German headquarters at Solesmes, Knapp[1] received a large number of applications from the French population for milk for cancer patients, and on inquiry from local practitioners found that cancer was one of the most frequent diseases in the district. Thus, in Le Cateau during the last 10–12 years 5·6 per cent. of the total deaths, in Montay 10·2 per cent., in Neuvilly 13 per cent., in Briastre 21 per cent., in Haussy 8 per cent., in Montrécourt 17·1 per cent., and in Saulzoir 11·8 per cent. were due to cancer. The high incidence of this disease was in striking contrast with the extraordinary longevity of the inhabitants and their otherwise remarkably good health. A large number of cases occurred in which persons who had come from a district and family free from cancer contracted the disease after settling in a cancer house. The prevalence of cancer in certain families, especially among those of the old bourgeoisie, at first suggested that the frequency of intermarriage in Northern France, and particularly in Solesmes, might have some influence on the dissemination of cancer. This supposition, however, was negatived by the fact that in other parts of Northern France intermarriages occurred without cancer resulting, and that in some cancer-free villages in the neighbourhood intermarriages among the peasants were almost as frequent as in Solesmes itself. Rats were extremely numerous in the cancer district, but autopsies and experiments on these animals did not throw any light on the subject. The topography of Solesmes suggested that there might be some connexion between the water-courses and the occurrence of cancer. Pollution of the water with organic matter was found with remarkable regularity in certain cancer districts and houses, but also occurred fairly often in places where there had been no cancer cases. Geological investigations had to be discontinued owing to the German retreat, but Knapp was convinced that a solution of the water and soil question would have explained why cancer was so extremely prevalent in an otherwise healthy region in which the population was remarkable for its longevity and in which, in spite of an extremely impure water-supply, enteric fever and other intestinal diseases were conspicuous by their absence. It is not, however, easy to see whence Knapp derived his convictions.

[1] Med. Klin., Berl., 1919, xv., 362-4.

THE TREATMENT OF PAROXYSMAL TACHYCARDIA BY RESPIRATORY EFFORT.

AT a recent meeting of the Académie de Médecine of Paris M. Ch. Fiessinger called attention to a very simple treatment of paroxysmal tachycardia. This condition may accompany a cardiac affection or be independent of one, being in both cases due to a trouble of innervation. It differs from all other tachycardias in the precipitate acceleration of the heart. While in the tachycardias due to cardiac lesions or to emotion the number of beats does not exceed 130 to 160 per minute, in paroxysmal tachycardia it reaches 180, 200, or even more. The malady suddenly appears during the decline of an acute disease, or it may occur without obvious reason in apparent health. It lasts for several hours, sometimes for days or weeks, with short remissions, producing rapid fatigue of the myocardium and marked asystole of the right cavities. For the treatment the authorities mention slow and deep inspirations, but they do not emphasise the point of respiratory effort, which M. Fiessinger considered as of the greatest importance. He described the case of a woman, aged 40 years, attacked with paroxysmal tachycardia, whom he saw in consultation. She was suffering from asystole, was out of breath, and cyanosed. The chest was full of râles and the extremities cold. The pulse had been 200 for several days and death seemed imminent. She was directed to make deep inspirations, followed by prolonged expirations. The pulse immediately fell to 70 and the trouble disappeared. Signs of mitral obstruction were then discovered. Six years have passed and the patient continues well. The use of respiratory effort was discovered by patients before the profession realised its value. In 1903 M. Fiessinger was treating with the late MM. Huchard and Merklen a man, aged 43, who suffered from prolonged crises of paroxysmal tachycardia. There was no previous cardiac or infectious disease. At the beginning of the malady the patient discovered an infallible means of arresting a crisis—by running. Later, when he could no longer run, Nature provided a remedy equally successful: he had attacks of asthma which always stopped the tachycardia. In a third case a man aged 51 years had cardio-renal disease—albuminuria and permanent hypertension. He suffered from attacks of paroxysmal tachycardia lasting three to four hours (pulse 190). The crises occurred during walking, but were stopped by accelerating the pace. He therefore adopted this means of stopping the attacks, and it never failed him. All respiratory effort, whether inspiratory or expiratory, if sufficiently sustained, seems capable of arresting the crises of paroxysmal tachycardia. There is one condition: the patient must know how to breathe deeply and must have preserved sufficient strength to be able to do this. After infectious diseases, when the myocardium is sometimes affected and the patient is too weak, respiratory effort should not be tried. The same holds for influenza in which antipyretics have been abused. Two patients, aged 43 and 47 years respectively, suffering from influenza, had

a fall of temperature to nearly normal on the fourth and eighth days after taking 1·5 to 2·0 g. of aspirin daily. Paroxysmal tachycardia (pulse 190 and 200) with cyanosis and cold extremities occurred. They were too weak to breathe more deeply and died in a few hours. The moral is obvious: antipyretics should not be given in large doses in febrile conditions. On the first sign of a crisis get the patient to breathe deeply and insist on the necessity for effort.

THE DOG AS TEST OBJECT.

No well-informed person supposed that the so-called Dogs' Protection Bill would be allowed to pass the House of Commons in the form in which it left the Standing Committee's hands. The Under Secretary for Home Affairs and the Parliamentary Secretary of the Local Government Board both assured the important medical deputation which waited on the Home Office on Friday of last week that the Government were opposed to the objects of the Bill. Sir Humphry Rolleston, who introduced the deputation, and Sir George Makins, Sir William Osler, and Professor E. H. Starling, who were its spokesmen, went over again in orderly fashion the arguments against the proposed further limitation of research entailed by the Bill if it became law—these we have already sufficiently outlined in these columns. Sir William Osler went so far as to state that the fate of the measure would be a test of the Chamber's intelligence, a challenge to which a popularly elected body can hardly fail to respond. Miss Aldrich-Blake added that the medical women of the country were opposing the Bill with a complete unanimity rarely attained in professional matters. Sir Hamar Greenwood concluded his reply to the deputation by explaining the nature of the contemplated Home Office amendment, which would have the effect of placing the dog in the same position as the horse under the Cruelty to Animals Act of 1876.

THE next session of the General Medical Council will commence at 2 P.M. on Tuesday, May 27th, when Sir Donald MacAlister, the President, will give an address.

Dr. Herbert French has been appointed Physician to His Majesty's Household in the room of Sir Robert William Burnet, K.C.V.O., resigned.

Professor C. R. Marshall has been appointed to the Regius chair of Materia Medica and Therapeutics in the University of Aberdeen.

Dr. Edgar Lee Collis has been appointed Talbot professor of preventive medicine at Cardiff. The appointment is in connexion with Sir William J. Thomas's gift of money to build public health laboratories to be worked in association with Cardiff College and the city and county public health bodies. Dr. Collis was for nine years one of H.M. Medical Inspectors of Factories at the Home Office, and is the author of various Home Office papers dealing with occupational diseases. For the past two years he has been Director of Welfare and Health at the Ministry of Munitions, and he is also an active member of the Industrial Fatigue Research Board.

TUBERCULOSIS.

Institutional Treatment for Insured Persons.

IN reply to a question in the House of Commons last week, Major Astor (Parliamentary Secretary to the Local Government Board) admitted the inadequacy of the accommodation provided in the Staffordshire area for the treatment of insured persons suffering from tuberculosis. The Staffordshire, Wolverhampton, and Dudley Joint Committee for Tuberculosis, he added, were actively engaged in the provision of additional accommodation for the treatment of persons in their area who are suffering from tuberculosis. A new institution, containing forty beds, was to be ready for patients early next month. We opine that similar inquiry in other county areas would elicit similar admission in regard to deficiency without perhaps the evidence of praiseworthy if tardy activity. We suggest a rota of such inquiries, county by county. The appointment of the Inter-Departmental Committee to deal with the interests of discharged soldiers and sailors, the membership of which we give on p. 859, is welcome evidence that effort is not to be thrown away by overlapping.

Prevalence of Tuberculosis in France.

At a recent discussion of the Society of Medicine in Paris on notification and segregation of the tuberculous in France it was stated that there were only 12,000 beds available, whereas there were more than 800,000 persons suffering from tuberculosis. Compulsory notification would, therefore, merely place a ban on 788,000 sick persons without affording them any material help.

Tuberculosis Pensions in South Africa.

The Minister of Mines at Cape Town moved on April 10th the second reading of a Bill dealing with miners' phthisis. Hitherto patients in the first stage of the disease have received £300 and in the second stage £750 in monthly instalments. The proposal is now made to increase the £300 to £375 and to substitute for the £750 a permanent pension of £10 to £15 a month, subject to residence in the Union. To induce the miner to leave his work underground before his working capacity is impaired the Bill proposes to grant a lump sum of £200 to men in what is defined as the ante-primary stage. The cost of these additional benefits is estimated at £520,000 in the first year, £430,000 in the second. Two-thirds of the sum required are to be levied from the employers, one-third from the employees.

The American Red Cross Society in France.

The January number of *War Medicine*, a journal published monthly by the American Red Cross Society in France, gives a long report of a conference on tuberculosis of the lungs. Major Rist referred to the enormous number of cases of chronic nasal obstruction mistaken for tuberculosis. Lieutenant-Colonel Webb drew attention to the frequency of early morning cough merely as a result of inhaling cigarette smoke, and he showed that though only about 5 per cent. of the American Expeditionary Force did not smoke, 32 per cent. of the last 600 men returned to the U.S.A. for tuberculosis happened to be non-smokers. He noted that though the chest signs of the cigarette-smoke inhaler are often mistaken for those of pulmonary tuberculosis, such men rarely develop tuberculosis. Several speakers referred to the difficulty of distinguishing tuberculous from non-tuberculous broncho-pneumonia, and the verdict that "gassing" seldom provokes pulmonary tuberculosis was given with striking unanimity by many speakers. Widely divergent opinions were, however, voiced as to the comparative frequency with which the tubercle bacillus is responsible for pleural effusion. Sir Almroth Wright took the opportunity of re-defining his position in regard to the specificity of vaccines in general, suggesting in regard to tuberculosis that if tuberculin apparently did no good, a vaccine made from some other microbe should be given a trial.

Tuberculosis Reports.

Middlesbrough.—Dr. H. A. Ellis's report deals with the period in which he has been in office up to Dec. 31st, 1918. The policy adopted during this period has been concentration on the early case instead of indiscriminate and ineffectual help for every class of case. By thus devoting most of a limited revenue to the early case, it is argued that, in time,

the recruiting of the advanced from the early cases will fall off, and meanwhile many of the cases already advanced will have died off. The report provides figures and other arguments to justify this policy, and the claim is made that even in the period dealt with—i.e., since the outbreak of the war—results have been obtained which endorse the wisdom of the policy adopted. The report draws attention to the unwisdom of lumping juvenile, surgical and pulmonary tuberculosis together, as each requires special measures for prevention and treatment; and it notes that while surgical tuberculosis in the North of England is either entirely neglected or treated in an archaic manner, pulmonary tuberculosis is being successfully attacked. This success is largely due to early notification, dispensary, sanatorium, and tuberculin treatment, and to a holiday scheme which provides two to three weeks' holiday for "working cases" threatened by a relapse. Still earlier diagnosis and notification is, however, necessary; and the report deplores the fact that in many cases the disease is still notified only just before death. Other matters discussed are the virulence of different strains of tubercle bacilli of the human type, the effect of tuberculin on prognosis, and classification. The North of England tuberculosis officers, it appears, have agreed to a uniform system of classification and statistics.

Annual Report of the Nova Scotia Sanatorium.—This sanatorium, which was established in 1904 by the Government of Nova Scotia for early cases, has published its thirteenth annual report. Patients are charged only $5 a week and about $2 a month for laundry. These charges cover less than half of the total cost per head ($12.50), the rest of which is met by the Provincial Government. The original main building has been converted into an administrative block and a military tent colony—ultimately to be replaced by permanent pavilions—has sprung up to provide accommodation for 100 men. The report gives tabulated records of discharges according to the patient's health, and classifies them with special reference to tuberculin treatment.

Report of the Henry Phipps Institute for the Study, Treatment, and Prevention of Tuberculosis, Philadelphia.—The fourteenth report of this institute publishes its labours in 11 concise papers which occupy the pages of the report practically from cover to cover. The subjects dealt with cover a wide range, and include such problems as the relation of tuberculosis to pregnancy, chemotherapy, racial habits with reference to diet, the abiotic action of ultra-violet light, and bactericidal fluorescence excited by the X rays.

The Annual Report of King George VII. Anti-tuberculosis League, Bombay, for 1917 brings out many interesting peculiarities in connexion with tuberculosis among the natives in India. It has been observed that tuberculosis among females, especially among Mahomedans, generally breaks out after a confinement, and that people coming to Bombay for the first time from localities where the disease is less prevalent acquire tuberculosis rapidly. It has also been found that 66 per cent. of the patients lived in one-room tenement houses. During 1917, 972 patients were treated at the league's two dispensaries, where altogether 3433 patients have been attended to. Tuberculin has been given only to selected cases and with due precautions. The league's educational propaganda has been conducted with the help of leaflets, lectures, pictorial demonstrations, a museum, and an information bureau.

The American Review of Tuberculosis.

The February number (Baltimore: National Association for the Study and Prevention of Tuberculosis; 35 cents) begins with an account by Dr. Lawrason Brown, Dr. F. H. Heise, and Dr. G. E. Wilson of an epidemic of typhoid fever at the Trudeau Sanatorium. The writers also discuss previous observations on typhoid fever in connexion with tuberculosis. Their experience that antityphoid inoculations are not permanently injurious to the tuberculous is the more interesting as at a recent discussion among German and Austrian army doctors diametrically opposite views were expressed. Dr. F. M. Pottenger contributes a paper on the subject, with which his name has long been associated—the significance of limited respiratory movement, and the viscero-motor, viscero-sensory, and viscero-trophic reflexes, in the diagnosis of pulmonary and pleural inflammation. A paper on the ultimate results of sanatorium treatment by Dr. J. A. Rutledge and Dr. J. B. Crouch deals with 1654 cases treated at the Modern Woodmen of America Sanatorium. They found that, 4 to 9 years later, 771 patients were still living and 883 were dead (46·6 and 53·4 per cent. respectively). They calculate that the moderately advanced type of case, with tubercle bacilli in the sputum, has an even chance of living five years after discharge. The interesting observation is also made that the number of cases sent to their sanatorium, wrongly diagnosed as tuberculous, is becoming greater every year; and that more than half of the deaths among patients in whose sputum the tubercle bacillus was not found, were due to non-tuberculous causes. A paper on the same subject, by Dr. P. K. Brown, deals with 238 patients who were traced several years after their discharge as "apparently cured," from the Arequipa Sanatorium for Wage-Earning Women. Of the first-stage cases, 68 per cent. were still well one to five years after discharge.

The North of England Tuberculosis Association.

This association recently made a new departure by arranging a post-graduate class for the members, made possible by the invitation of the trustees of the Lord Mayor Treloar Cripples' Hospital and College, Alton, Hants. The course occupied four days, and the members were at work in the various departments of the institution from 11 A.M. to 7.30 P.M. each day, so they were given every opportunity of acquiring all the information possible in the time at their disposal. Mr. H. J. Gauvain, the medical superintendent, gave two lectures, each of an hour's duration, daily, and personally demonstrated the many procedures in the conservative treatment of surgical tuberculosis. Many cases were aspirated, showing a method of treating tuberculous abscesses, which has yielded gratifying results in spinal caries and hip disease. The rest of the time was spent in the wards (where there are nearly 300 occupied beds) in demonstrating the various points of importance in diagnosis and ways of obtaining immobilisation and rectification of faulty position. A feature of the undertaking was that the various public bodies defrayed the expenses of their officers in attending the course.

A CONFERENCE OF REPRESENTATIVES OF VARIOUS MEDICAL BODIES.

A CONFERENCE of representatives of various medical organisations was held on May 6th at the offices of the British Medical Association. The conference was called by the Council of the Association on the initiative of the Association of Panel Committees, which suggested that the subjects of discussion should be the possibilities of common action, the best means of securing that the Medical Consultative Council of the Ministry of Health should possess the confidence of the great body of the profession, and the best means of securing the support of all medical organisations for the National Insurance Defence Trust.

The following organisations were invited to send representatives: the Association of Panel Committees, the Medico-Political Union, the Medical Parliamentary Committee, the Medical Women's Federation, the National Medical Union, the State Medical Service Association. The two last-named societies have not yet replied to the invitation, probably owing to the comparative shortness of the notice.

The following representatives were present: Association of Panel Committees: Dr. H. J. Cardale, Dr. Peter Macdonald, Dr. B. A. Richmond, Dr. J. P. Williams-Freeman. Medico-Political Union: Dr. F. Coke, Dr. E. H. Stancomb, Dr. A. Welply. Medical Parliamentary Committee: Dr. C. Buttar, Dr. A. Latham, Dr. Jane Walker, Dr. A. S. Woodwark. Medical Women's Federation: Dr. Jane Lane Claypon, Dr. Dickinson Berry. British Medical Association: Dr. M. G. Biggs, Dr. H. B. Brackenbury, Dr. A. Cox, Dr. T. W. H. Garstang, Dr. G. E. Haslip (acting for Dr. J. A. Macdonald, unable to be present).

Dr. Garstang was appointed chairman, and in welcoming those present expressed the hope that all would try to put into the background the things on which there were differences of opinion and concentrate on the points on which there was likely to be agreement.

Common Action.

Dr. Richmond stated that the position of the Association of Panel Committees was that there should be a body directly representative of panel committees and looking specially after their interests, and his association had used its influence to modify the composition of the Insurance Acts Committee in that direction. They were very desirous of bringing about unity in the profession, and thought the time had come when the British Medical Association should foster a federation of all medical organisations. Dr. Macdonald emphasised these remarks and advocated the early formation of a liaison committee, which should contain representatives of all medical organisations that cared to come into it. He made certain proposals for common action which he thought should be considered at once by a small committee of the conference.

The idea of having a small committee received general approval. Dr. Stancomb, on behalf of the Medico-Political Union, stated his agreement that there was danger to the profession in the competition which was now going on and also in the existence of rival deputations on the same subject. He added that his union did not desire to injure the British Medical Association nor to rival it, and he submitted the following conditions by means of which an understanding could be arrived at:—

(*a*) That there should be recognition of the trade-union as a possible valuable adjunct in medical organisation.

(*b*) That the Medico-Political Union should be frankly recognised as the official body representing those members of the profession who wished to belong to a medical trade-union.

(*c*) That the British Medical Association should recognise the Medico-Political Union as the agent for the profession in collective bargaining in the final resort—that is, if ordinary means of persuasion had failed, and there was any question of refusing to accept or renew contracts or anything which might be construed as being in "restraint of trade," the matter should be dealt with by the Medico-Political Union.

(*d*) That further conferences be held to define limitations of work and prevent overlapping.

(*e*) That there should be mutual agreement in important matters before any action is taken by way of joint deputations.

Eventually a committee consisting of Dr. Brackenbury, Dr. Garstang, Dr. Richmond, Dr. Welply, Dr. Buttar, and Dr. Jane Walker was constituted to consider and report on the best ways of promoting common action, including the possibility of forming a liaison committee; and to consider also the proposals made by Dr. Stancomb, which were not then further discussed. Dr. Cox was appointed secretary of the committee, and it was agreed that it should meet on Friday, May 16th, and report as soon as possible to another meeting of the conference.

Medical Consultative Council to Ministry of Health.

It was reported that a scheme for the selection of names for nomination to the Minister had been sent by the British Medical Association to Dr. Addison, who had been asked whether he was prepared to accept it. It was agreed that in whatever way nominations were desired by Dr. Addison it was desirable that there should be consultation between the various bodies asked to nominate, and arrangements were made to secure this.

National Insurance Defence Trust.

A discussion took place on the best way of securing united action in connexion with this fund, and the matter was postponed until after the consideration of the report of the committee referred to above.

His Royal Highness the Prince of Wales has consented to become the President of the Royal Dental Hospital of London, Leicester-square.

THE RED CROSS HOSPITAL AT NETLEY.—This hospital, built on the hutment encampment system in the autumn of 1914, is now being transferred to the War Office. Originally consisting of 500 beds, the hospital was extended to take a thousand patients, and during the past four and a half years 20,000 men, including 1110 officers, have been accommodated. Queen Alexandra, as President of the Red Cross Society, has written to the secretary of the Red Cross Committee expressing her appreciation of the work done at the hospital which, though affiliated to the Royal Victoria Hospital at Netley, possessed its own medical and surgical staff.

HYGIENIC RECONSTRUCTION OF WAR DEVASTATION:

AN INTER-ALLIED CONFERENCE IN PARIS.

(FROM OUR OWN CORRESPONDENT.)

THE Inter-Allied Conference for social hygiene in the reconstruction of the districts which have been laid waste by the war met at Paris from April 22nd to 26th at the Sorbonne. The President of the Conference was Dr. Doizy, who is also President of the Commission on Hygiene in the Chamber of Deputies. There was a large attendance at each of the 13 sections. At the opening session M. Henry Pate, the President of the National Committee on Social Hygiene, explained the object of the Conference, which was to profit from the necessity of reconstructing war-devastated areas in order to publish new principles. They were proceeding to this work of reconstruction armed with the most recent gifts of science and under better conditions than those which prevailed when it was a question of reforming organisations already in existence. The education of the French people in hygiene had in many respects to be created; it was deserving of at least as much attention as was devoted to the care of the domestic animals. The communications made to the Conference were very numerous and the discussions of great interest. It is only possible to give a brief summary here.

SECTION I.—*Soil and Water.*

Papers: The sanitation of the soil, including the conditions under which bodies may be exhumed, and the importance of filling up shell holes as a measure of prophylaxis against malaria; The supply of drinking-water in those districts where the Germans have cut the water mains, filled in the springs, or poisoned the wells; Water purification by chlorination, ozone sterilisation, and the Ransome filter.

Resolutions were carried asking that plant left by the Army be made available for the use of those communes who, being without resources, should make application therefor.

SECTION II.—*Housing.*

Papers: Garden cities; Rapid and hygienic methods of construction; Artificial stone; The use of war material in levelling and reconstruction; The adoption of the Russian system of elevated basements for the damp regions of the north.

Resolutions were passed favouring the revision and enforcing of sanitary law, and recommending a rebate on the rating of houses which arrive at a reasonable standard of sanitation.

SECTION III.—*Rural Hygiene.*

Papers: Agricultural labourers, their dwellings, their sleeping quarters, and their food; Model farming; Manure stacks and liquid manure cisterns; Hygienic dairies; Village extension and hygiene; Removal of farm refuse; Hygiene of public and private slaughter-houses; The organised repression of fraud; Infantile mortality in country hovels.

SECTION IV.—*Urban Hygiene.*

Papers: Improvements in English rural and urban hygiene in the last 15 years; Interdependence of problems of hygiene in town and country; The sanitation of towns and the disposal of waste water; The disposal of waste water into shallow pools, as is practised in Strasbourg; The purification of offensive waters; Town halls.

SECTION V.—*Puericulture.*

Resolutions were passed recommending: (*a*) The formation of schools of puericulture in every department to which necessitous mothers should be admitted for the whole periods of pregnancy, confinement, and suckling; (*b*) the organisation of competent superintendence of all children throughout the whole period of their early childhood; (*c*) the teaching of eugenics in school to the young of both sexes; (*d*) compulsory attendance at a maternity centre in those cases where the child has not sufficient care in its own home and where the hygienic conditions are not such as to ensure its full moral, physical, and intellectual development; (*e*) the construction of maternity centres in every town, these to be well built, thoroughly ventilated, and exposed to the sunlight, giving at the mid-day hour a meal appropriate to the age of each child.

SECTION VI.—*Scholastic Hygiene.*

Papers: Open-air schools; Teaching of alimentary hygiene; Cantines scolaires ("Tuck-shops").

Resolutions were passed demanding: (*a*) The rebuilding of schools in conformity with the teachings of modern hygiene, with strict application of the regulations governing the site of the buildings (at a distance from factories, public houses, &c.), and so far as possible in airy districts; (*b*) that all plans be submitted for the approval of competent commissions, which should include schoolmasters, doctors, teachers and directors of maternity centres; (*c*) that schools be surrounded by a large area of playing fields; (*d*) that these be furnished with reasonable appliances adapted to the age and needs of the children and approved by the Commission above mentioned; (*e*) that schools be provided with good water, with bathrooms and shower baths; (*f*) that the schoolmaster's house be in accordance with his position and provided with a garden; (*g*) that the Chamber and Senate pass as an urgency measure the law on medical inspection in schools; (*h*) that the cantines scolaires be established wherever possible in towns as well as in the country under the control of the school doctor and provided with a refectory; (*i*) that open-air schools be established for town children, classes to be held in the open air when the weather is fine; (*j*) the foundation of a corps of select assistants in scholastic hygiene; (*k*) that the presence of pediculi be regarded as constituting an infectious disease, and that legal measures be taken against those parents who fail to cure their children; (*l*) the handing over of the army shower baths to schools in the devastated regions.

SECTION VII.—*Physical Education.*

Papers: Physical education in the schools of the liberated districts; The organisation of physical education in schools; Physical education in maternity centres; Shooting and rifle ranges; The organisation of swimming baths; The recruiting and the moral and material position of teachers of physical education; The creation of physical education centres in the invaded regions; Hygiene, gymnastics, and school games.

Resolutions were passed as follows: (*a*) That maternity centres should possess large sunlit courts where open-air classes may be held, shower-baths, furniture appropriate to the children's age, and canteens appropriate to their needs; (*b*) that there be organised a system of medical supervision entrusted to the nurses and under the direction of the inspecting doctor acting in collaboration with the instructors; (*c*) that the instructors in maternity centres come under the same conditions as to hours of work as the teachers in primary girls' schools; (*d*) that an *ad hoc* maternity training be given to these instructors; (*e*) that the programme of lessons be so arranged that no overworking shall occur either in the brain work or physical education; (*f*) that playing fields be provided in the neighbourhood of every commune; (*g*) that these fields be obtained free of cost to the municipality; (*h*) that physical education be endowed by the State.

SECTION VIII.—*Prophylactic Sanitation.*

Papers on venereal diseases: Regulation of vice; The urgent problem in the devastated area; Prophylactic centres; An international institute of sanitation at Paris. Other papers: Prophylaxis of small-pox; The early diagnosis of tuberculosis; The transport and disinfection of patients suffering from infectious diseases; Tuberculosis in the devastated area; Tuberculosis in Serbia.

SECTION IX.—*Social Hygiene.*

Papers: The creation of mobile bacteriological laboratories; The sanitary and social work of the American Red Cross in and around Paris; Hospitals for infectious diseases in the devastated area.

Discussion on the prevention of the introduction of small-pox by foreigners into France; on this subject the following resolutions were passed: (*a*) That the frontier service be reinforced; (*b*) That every person presenting himself at the frontier be required to furnish a certificate of recent vaccination, and failing such a certificate the traveller be immediately vaccinated; (*c*) that prefects be reminded that it is within their power to order a vaccination of the whole population in case the danger of a small-pox epidemic presents itself; (*d*) that it is desirable that international agreement should be arrived at for the general application of preventive measures; (*e*) that the Minister for the devastated areas be asked to demand a certificate of vaccination of all foreigners employed in these areas.

SECTION X.—*Industrial Hygiene.*

Papers: Reconstruction of destroyed workshops; The engineer's duty in the improving of large workshops; Rational mechanical ventilation; Drinking water and waste water; Sterilisation of water by insoluble manganates; The present position of the white lead problem in modern industry; The labour question and the lot of the workers; Sanitary organisation in the Briey area.

SECTION XI.—*Post-scholastic Hygiene and Moral Prophylaxis.*

Papers: Organising popular libraries; The influence of the cinematograph; Education of the people in alimentary hygiene and the danger of venereal disease; Creation of town clubs in the devastated area; The struggle with alcoholism.

Resolutions recommended: (*a*) Rigorous application of the laws on drunkenness; (*b*) formal invitation to municipalities to make use of their legal powers in the opening or suppression of public-houses; (*c*) freedom from all taxation for those inns which sell non-alcoholic drinks only; (*d*) absolute interdiction of all distilleries in the devastated area; (*e*) that it be forbidden to sell tobacco, matches, and postage-stamps in shops where alcoholic drinks are sold, so-called hygienic drinks being included whatever proportion of alcohol they may contain; (*f*) that every town-hall should have a temperance restaurant attached and that canteens be provided either in close proximity or actually attached to all large workshops; (*g*) reduction of the number of public-houses through purchase, either by individuals or by groups or by municipalities or by departmental committees; (*h*) suppression of the sale of alcohol in many inns by the same methods of purchase; (*i*) establishment of temperance restaurants and inns and popular clubs.

SECTION XII.—*Hygiene in Transport.*

Papers: Hygiene of common transport; The need for sanitary wagons.

Resolutions demanded from the railway and transport companies that their new coaches and wagons should be built on modern hygienic principles; that disinfection be carried out as often as possible; the segregation of smokers; that spitting be forbidden; and that carriages be provided for travellers suffering from infectious diseases.

SECTION XIII.—*Economics.*

Papers: Organisation of the food-supply in the devastated area; Common kitchens; Utilisation of military travelling kitchens; The increase of coöperative societies; Temperance restaurants; Coöperative societies in agriculture, building, garden produce; Industrial work for women at home or in the workshop; The legal defence of country labourers; The rebuilding of destroyed towns; The institution of popular banks.

The President of the Republic was present at the closing session of the Conference, which took place in the great amphitheatre of the Sorbonne, the Allied delegates also attending. Afterwards an excursion was arranged for those who had taken part in the Conference. Arras was visited and the neighbourhood, where the visitors were able to gather from a view of the ruins how enormous is the task which remains to be accomplished. This is the first Inter-Allied Conference which has met since the war, and its sum-total of work has been very considerable. Every problem in hygiene has been touched on, and whilst the work of reconstruction in the war-swept area has been the first consideration, interesting solutions have been forthcoming which are applicable to every part of the country. The Proceedings of the Conference when they come to be published will constitute a veritable encyclopædia of modern hygiene, a valuable work of reference to very many people in every walk of life. It is to be hoped that the energy devoted to the preparation of these admirable schemes will be kept up until they have been carried through.

NOTES FROM INDIA.

(FROM OUR OWN CORRESPONDENTS.)

Child Welfare in India.

ON the advice of the Association of Medical Women in India a representative committee has been formed at Delhi to arrange for an exhibition in maternity and infant welfare work to be held in Delhi in February, 1920, under Viceregal patronage. The exhibitions will include the following sections: (*a*) pre-maternity; (*b*) maternity; (*c*) infant and childhood hygiene and sanitation; (*d*) home nursing and first-aid. An organising committee has been formed, each member of which will undertake organisation of one of the above sections.

Infant Mortality in Bengal.

At a recent meeting of the Bengal Legislative Council it was stated that the infantile mortality was undoubtedly high in Bengal, the number of deaths during last year being 308,537. The Bengal Government intended to take up the question of child welfare, with special reference to infant mortality, and to consider what measures could be taken to reduce the present high death-rate among infants.

The Medical Services Committee.

The task before the Medical Services Committee is of the highest importance to the European community, but, none the less, little public attention has been directed to the inquiry which the Committee has been conducting. The members of the Committee are now at Simla, and their report will be presented to the Government of India in a short time. The question as to whether there shall be a single military medical service in India is an administrative one, but the general European public have a direct concern in the matter of the provision of adequate medical facilities for the community at large. "This problem has assumed," says an Allahabad newspaper, "greater importance than ever now that Indian affairs are regarded from a new angle of vision. The Secretary of State made a reference to the Committee in replying to a deputation from the British Medical Association ..... 'I think,' he said, 'we agreed last summer that the Indian Medical Service requires reorganisation and, in particular, that its relationship to the Royal Army Medical Corps requires investigation. That investigation is not complete, but the Government of India have appointed a representative committee which met early last month to examine and report on the reorganisation of the medical services in India. The recommendations of this committee with the views of the Government of India upon it will be submitted to me, I am assured, at as early a date as possible.'" It does not yet appear whether the report is to be published. The committee held its sittings *in camerâ*, but its findings can hardly be kept from the public.

Vital Statistics of Calcutta.

The total number of deaths registered during the week ending April 5th, 1919, was 994, against 958 and 786 in the two preceding weeks, and higher than the corresponding week of last year by 512. There were 209 deaths from cholera, against 144 and 76 in the two preceding weeks; the number is higher than the average of the past quinquennium by 128. There were 26 deaths from plague, against 26 and 14 in the two preceding weeks, the average of the past quinquennium being 15. There were 80 deaths from small-pox during the week, against 74 in the previous week. There were 91 deaths from influenza, against 98 in the previous week. The mortality from fevers and bowel complaints amounted to 107 and 61 respectively, against 101 and 52 in the preceding week. The general death-rate of the week was 57·6 per mille per annum, against 31·2, the mean of the last five years. There were 60 imported deaths. Excluding these, the death-rate of the week was 54·2.

Correspondence.

"Audi alteram partem."

R.A.M.C. FUND AND R.A.M.C. OFFICERS' BENEVOLENT SOCIETY.

To the Editor of THE LANCET.

SIR,—The annual general meeting of the R.A.M.C. Fund will be held in the library of the R.A.M.C. College, Grosvenor-road, S.W., at 2.30 P.M., on Wednesday, June 11th. The Director-General will preside. It is hoped that all subscribers who can spare the time will be present and will freely express their views on any point connected with the Fund. The annual general meeting of the R.A.M.C. Benevolent Society will take place immediately afterwards. Any officers desiring information regarding these funds are requested to communicate with the secretary beforehand, so that there may be no delay in dealing with any questions asked.

I am, Sir, yours faithfully,

E. M. WILSON,
124, Victoria-street, S.W. Lieutenant-Colonel, Secretary.

MEDICAL PARLIAMENTARY COMMITTEE.

To the Editor of THE LANCET.

SIR,—Although not definitely set forth upon the agenda of the Conference called by the Medical Parliamentary Committee at Westminster on May 2nd, it became abundantly evident in the discussion which took place that one of the main aspirations of the Committee was to establish a unity, or at least a *modus vivendi*, between the conflicting schools of thought of the various organisations of the medical profession, and in this endeavour everyone must wish it God-speed. For the apathetic and irresolute attitude which has been taken by the profession towards the great wave of public opinion upon the health of the nation has been pitiable, and those who by virtue of their training and knowledge should have been the arbiters of the situation and the directors of general thought upon the subject have been content to wait for a lead. A Minister of State will soon be responsible for the health of the country who will, doubtless, share with the man in the street a good-natured tolerance of a profession which does not know its own mind, and will realise fully that its members will have to accept such conditions of the work which they and they only can do, as he finds it politic to impose upon them.

It is true that "Ministry of Health" committees have been appointed by various medical bodies, but these have been mainly occupied in a diligent elaboration of certain general principles—two of which at least have been already negatived in the Bill—and have not hitherto evolved a constructive policy for the betterment of the national health which will appeal alike to the general public and to the profession itself. And yet the urgent necessity for a policy which will deal with the pressing issues of the situation is sufficiently obvious. If the Minister of Health is to have any promise of success in an effort to raise the national health to the highest possible standard he must, through his executive, not only have cognisance of every defect of sanitation, housing, food, and the like in the country, but must also be in touch with the personal health and conditions of life of every individual in the community; and while he will then be in a position to avert and prevent a vast amount of ill-health, he should also be provided with the best resources, both clinical and institutional, for the cure or alleviation of all such disease as is unavoidable; and to do this effectually he must be able to maintain an executive, i.e., a medical profession, of the highest possible quality and attainment. If, then, with these premises before it the Medical Parliamentary Committee can suggest by collected opinion an answer to the problem which they present, it will have justified its existence and done inestimably good work.

It would appear that the most acute divergence of medical opinion lies in the conditions under which the medical profession should undertake the very rapidly growing service of the State, and that the chief point at issue is whether it is better that the present system of private practice with the State work thrown in should be maintained or that a whole time service of the State should be established. Perhaps the Medical Parliamentary Committee will be able to reconcile these views by devising an efficient service of the State which shall leave room for private practice. But in any case it is evident that the Committee has an ample field for useful work if it can gain and retain the confidence of its constituent organisations.

I am, Sir, yours faithfully,

Hove, May 10th, 1919. J. F. GORDON DILL.

SUBACUTE TRENCH FEVER.

To the Editor of THE LANCET.

SIR,—In your issue of May 10th Major J. H. Lloyd has a very instructive paper under the above heading. He draws attention to the frequency of long-standing cases of trench fever, and rightly urges the importance of the recognition of this condition. I note that Major Lloyd takes exception to my proposal to call such cases "trench fever cachexia," and says, "undue prominence is given to one only of many concomitants, and that one not always present"; but it seems to me that the term "cachexia" very well expresses the main features of the condition. A "cachexia," according to Webster's International Dictionary, is "a condition of ill-health and impairment of nutrition due to impoverishment of the blood, especially when caused by a specific morbid process (as cancer or tubercle)." The term is applied in regard to chronic malaria, and it was on account of the resemblance in many ways between chronic malaria and chronic trench fever that I used it in connexion with the latter disease.

But I think that either the term "chronic" or the term "cachectic" should be used rather than "subacute" in describing the condition. According to Webster's Dictionary once more, a chronic disease is "one which is inveterate, of long continuance, or progresses slowly, in distinction from an acute disease which speedily terminates," while "subacute" means "moderately acute" or, according to Nuttall's Standard Dictionary, "acute in a moderate degree." Now surely the disease under discussion, which lasts for months or even years, and, as Major Lloyd rightly shows, is sometimes free from fever, should be termed "chronic" or "cachectic" rather than "subacute." Several months ago I promised a short paper to the Association of American Physicians for our June meeting, under the heading of "A Chronic Type of Trench Fever." Colonel A. B. Soltau used the word "smouldering" in describing this type, which well describes the condition.

But, after all, nomenclature of disease is usually unsatisfactory, and the main thing in the present case is to bear in mind the common occurrence of a long-standing infection which produces considerable disability and much minor suffering, especially if it be not recognised.

I am, Sir, yours faithfully,

Oxford-street, London, W., May 12th, 1919. R. D. RUDOLF.

"OURSELVES ONLY."

To the Editor of THE LANCET.

SIR,—This is a momentous time for medicine, for during the next few months the State will arrive at decisions which will profoundly modify the whole future of our profession. We naturally seek anxiously for guidance through these troubled waters, and are at once confronted with two clamorous applicants for the post of pilot—the British Medical Association and the "Medico-Political Union."

On examining the credentials of these two bodies a dilemma is inevitable. The British Medical Association has been long known to us as an august body, governed by a hierarchy of consultants with a small sprinkling of general practitioners; it has always aspired to rule the profession and to usurp the powers of the General Medical Council, and has, moreover, professed to stand for pure ethics and the best traditions of our profession. Yet a recent decision of the High Court has stripped the Association of its pretensions, and revealed it to the world as a cruel and relentless trades-union! We winced at the scathing comments of the learned judge, but could not deny their justice.

There is no deception about the "Medico-Political Union," which is frankness itself; it proclaims medicine a "trade," and, naked and unashamed, glories in trades-unionism. Its ethics are those of the "Amalgamated Society of Engineers,"

and its weapons the same. Its motto is: "Ourselves, and Ourselves Only." This body appears to be governed by a council of general practitioners to whose absolute control every member on joining has to give written submission. These two bodies profess antagonism with considerable energy, and separately claim a right to our unhesitating allegiance. Yet is there any substantial difference between them? The "Medico-Political Union" stands self-revealed as a trades-union pure and simple; but if we blow aside the smoke-cloud of great names which envelopes the British Medical Association, and pierce the thin screen of pseudo-ethics which camouflages it, what do we find but a trades-union—*et præterea nihil?*

If we admit that these two associations do not entirely misrepresent the soul of our profession, if we have no higher ideal, no wider vision, than theirs, if our motto is really to be "Ourselves only," can we wonder that the State, whose lives lie helpless in our hands, thinks that the time is ripe for it to step in and take control?

I am, Sir, yours faithfully,

Havant, Hants, May 9th, 1919. ARTHUR J. GEDGE.

*** The two bodies will not accept Mr. Gedge's portraits, but he is setting out truth when he suggests that the claims of the medical profession on the State are damaged by as much as consideration of the public good is omitted from them.—ED. L.

LABORATORY METHODS AND THE DIAGNOSIS OF VENEREAL DISEASES.

To the Editor of THE LANCET.

SIR,—With reference to Mr. H. W. Bayly's letter with this title in your issue of May 10ih, I am afraid that in my paper I rather took it for granted that pus cells should be excluded in the final examination. In my experience, if a case shows persistence of pus cells in large numbers it is generally possible to find a few organisms, not necessarily gonococci. If, however, the number of pus cells is rapidly diminishing, with total absence of all organisms, I consider this is a criterion of cure, as only time is required before the pus disappears altogether. My chief objection to potassium permanganate is that to be effective it has to be used in strengths that are very irritating to the urethral mucous membrane, whereas flavine can be used much stronger without ill-effect. Latterly, I have been using it as a routine in a strength of 1/4000, and sometimes 1/2000, and patients have not complained of irritation. With regard to vaccines, I always start at 20 million gonococci, and quoted 50 million as Captain Lumb's initial dose. Unless one knows one's strain of vaccine, I am inclined to agree that 50 is too high, but have not found any ill-effects with 20 million, and results are certainly better than with smaller doses. I am now using Thomson's detoxicated vaccines, starting at 2500 million.

I am, Sir, yours faithfully,

Welbeck-street, May 9th, 1919. H. E. GIBSON.

NORTH-WESTERN TUBERCULOSIS SOCIETY.

To the Editor of THE LANCET.

SIR,—At a recent meeting of the above society, membership of which is open to medical practitioners in Lancashire and Westmorland who are specially interested in tuberculosis, the following two resolutions were unanimously passed, and I have been requested to ask you to be good enough to publish them:—

1. That this society, after very careful consideration, has unanimously resolved that the question of corporate affiliation with the Tuberculosis Society or the Society of Medical Officers of Health be deferred for further consideration at a future meeting, at which it is hoped to obtain a more representative attendance of tuberculosis officers in the north-western area.
2. That the members present express their appreciation of the efforts of the Tuberculosis Society to further the interest of tuberculosis officers generally and unanimously agree to become candidates for membership.

I am, Sir, yours faithfully,

GEORGE JESSEL, Hon. Secretary.

Tuberculosis Dispensary, Wigan, May 12th, 1919.

THE Secretary for Scotland has renewed the appointment of Dr. Norman Walker as inspector of anatomy for Scotland for a further period of one year.

The War and After.

THE CASUALTY LIST.

THE names of the following medical officers appear among the casualties announced since our last issue:—

Killed.

Major H. H. Robinson, M.C. with bar, M.O. 9th Wing R.A.F., was a student at the London Hospital, and qualified in 1912. He was killed at Mons in an aeroplane accident.

Died.

Temp. Capt. A. C. Sturdy, M.C., R.A.M.C., was educated at Cambridge and at St. Bartholomew's Hospital, and qualified in 1909. He held appointments at St. Bartholomew's and at the Royal Free Hospitals, London, and prior to joining up was in practice at Horsham, Sussex, where he was public vaccinator to the urban district and surgeon to the Cottage Hospital. He died at Bombay of dysentery.

THE PROVISION OF SANATORIA FOR DISCHARGED SOLDIERS AND SAILORS SUFFERING FROM TUBERCULOSIS: INTERDEPARTMENTAL COMMITTEE APPOINTED.

THE President of the Local Government Board and the Minister of Pensions have appointed Major the Hon. Waldorf Astor, M.P. (Chairman), Sir Montague Barlow, K.B.E., M.P. (Vice-Chairman), Colonel Sir Arthur Griffith-Boscawen, M.P., Lieutenant-Colonel Nathan Raw, M.D., M.P., Honorary Brigadier-General Sir Owen Thomas, M.P., Sir Kingsley Wood, M.P., Dr. E. Coey Bigger (Irish Local Government Board), Dr. F. J. H. Coutts (Local Government Board), Mr. James Currie, C.M.G. (Ministry of Labour), Mr. R. W. Harris (National Health Insurance Commission), Sir J. Leslie Mackenzie, M.D. (Scottish Local Government Board), Dr. J. Fletcher Porter (Ministry of Pensions), Mr. J. Smith Whitaker, M.R.C.S., L.R.C.P. (National Health Insurance Commission), to be a committee to consider and report upon the immediate practical steps which should be taken for the provision of residential treatment for discharged soldiers and sailors suffering from pulmonary tuberculosis and for their re-introduction into employment, especially on the land. Dr. F. R. Seymour, of the Local Government Board, will act as Secretary, and any communications should be addressed to him at the Local Government Board.

URBAN VITAL STATISTICS.

(Week ended May 10th, 1919.)

English and Welsh Towns.—In the 96 English and Welsh towns, with an aggregate civil population estimated at 16,500,000 persons, the annual rate of mortality, which had been 16·9, 14·3, 13·5, and 13·7 in the four preceding weeks, fell again to 12·6 per 1000. In London, with a population slightly exceeding 4,000,000 persons, the annual rate was 12·5, or 1·5 per 1000 below that in the previous week, and among the remaining towns the rates ranged from 4·9 in Ealing, 5·0 in West Hartlepool, and 5·5 in Enfield, to 18·1 in Bury, 19·1 in Tynemouth, 19·4 in Hastings, and 19·5 in Hull. The principal epidemic diseases caused 147 deaths, which corresponded to an annual rate of 0·5 per 1000, and included 47 from measles, 42 from infantile diarrhœa, 27 from diphtheria, 19 from whooping-cough, 8 from scarlet fever, 3 from enteric fever, and 1 from small-pox. Measles caused a death-rate of 3·2 in Rotherham and 4·4 in Middlesbrough. The deaths attributed to influenza, which had steadily declined from 3889 to 172 in the ten preceding weeks, further fell to 142 last week, and included 29 in London, 12 in Manchester, and 6 each in Bradford, Sheffield, and Birmingham. There were 2 cases of small-pox, 1065 of scarlet fever, and 1129 of diphtheria under treatment in the Metropolitan Asylums Hospitals and the London Fever Hospital, against 1, 1064, and 1148 respectively at the end of the previous week. The causes of 30 deaths in the 96 towns were uncertified, and included 3 each in Stoke-on-Trent, Liverpool, and Gateshead.

Scotch Towns.—In the 16 largest Scotch towns, with an aggregate population estimated at nearly 2,500,000 persons, the annual rate of mortality, which had declined from 40·0 to 12·8 in the ten preceding weeks, rose last week to 13·7 per 1000. The 318 deaths in Glasgow corresponded to an annual rate of 14·8 per 1000, and included 25 from whooping-cough, 19 from measles, 2 from infantile diarrhœa, and 1 each from scarlet fever and diphtheria. The 91 deaths in Edinburgh were equal to an annual rate of 14·1, and included 4 from whooping-cough, 3 from scarlet fever, 2 from measles, and 1 from infantile diarrhœa.

Irish Towns.—The 134 deaths in Dublin corresponded to an annual rate of 17·3 per 1000, or 1·8 below that recorded in the previous week, and included 3 from infantile diarrhœa. The 114 deaths in Belfast were equal to an annual rate of 14·8 per 1000, and included 2 from infantile diarrhœa.

Obituary.

FREDERICK JOHN SMITH, M.D. OXON., F.R.C.P. LOND., F.R.C.S. ENG.,

CONSULTING PHYSICIAN TO THE LONDON HOSPITAL.

As we briefly recorded last week, Dr. F. J. Smith survived only a few months the termination of his active professional life in London, dying at his country house, Colyton, Devon, on April 30th, aged 62.

Frederick John Smith was born in 1857 at Castle Donington, the son of a surgeon of considerable repute in Leicestershire. He was educated at Christ's Hospital, where he showed mathematical ability which took him on to Balliol with an open scholarship. The Letheby Scholarship next fell to him and the first entrance scholarship in science at the London Hospital, which was the beginning of a distinguished undergraduate career. He graduated in arts in 1880, in medicine five years later, when he was elected Radcliffe Travelling Fellow, and in 1887 he became a Fellow of the Royal College of Surgeons of England. In the same year he obtained the Membership of the Royal College of Physicians of London, becoming in due course M.D. Oxon. and F.R.C.P. Lond.

Dr. F. J. Smith's connexion with the London Hospital extended over many years. After being house physician he became medical registrar in 1887, assistant physician four years later, and in July, 1902, he was appointed full physician. He was for a while lecturer on medicine until he was appointed to the lectureship of forensic medicine. He was at one time senior pathologist and an active member of the Medical College Board. Among his other numerous appointments were those of consulting physician to the City of London Dispensary and the National Orthopædic Hospital, examiner in forensic medicine at the Universities of Birmingham, Leeds, and Oxford, and medical referee under the Workmen's Compensation Act.

Medical societies owed much to his energy and interest. He was a Fellow of all the principal medical societies in London and orator at the Hunterian Society in 1900, when he discoursed upon the influence of modern surgery on medical practice. From 1904 to 1906 he presided over the Hunterian Society. During the difficult period of the war he was President of the Medico-Legal Society, contributing papers himself on the legal definition of drunkenness and on the Criminal Law Amendment Bill. Of his contributions to medical literature he edited the fifth, sixth, and seventh editions of Taylor's "Medical Jurisprudence," brought out a discriminating work on "Differential Diagnosis" in 1899, and published his "Lectures on Forensic Medicine" in 1900. The latter, while embodying the clear and authoritative teaching given to his students at the London Hospital, was also designed to meet the needs of the busy practitioner suddenly called upon to give evidence in court on difficult or obscure cases. The frequent use of comparative tables and summaries was an excellent innovation in this book, which has since found many imitators.

Dr. F. J. Smith was a man of marked personality which produced attraction or the reverse among those with whom he worked, but never indifference. One of his colleagues who held him in ever-increasing affection and respect writes of him:—

"It was for what he was that everyone esteemed F. J. Smith. There have been cleverer men connected with the hospital, although he was a very able man in many ways; there have been men who contributed more to the advancement of scientific knowledge, though none was more devoted to the interests of the patients under his care; but there has been no man at the hospital who drew to himself in fuller measure the affection of all those with whom he worked, and he did this mainly by the transparent honesty, simplicity, and sincerity of his character. His was a nature without guile. He made no pretence of being a cleverer, a more successful, or even a better man than he was. His faults were all on the surface. He held strong views and expressed them often in vehement language, but he was tolerant of the views of others, and though quick to resent an injury he cherished no grudge."

Having served his hospital faithfully for many years and exhausted himself in an arduous and often ill-remunerated practice—for no one did more charitable work than he—Dr. Smith retired to the country, hoping to spend the remnant of his days in peace, leaving behind the cares and worries of professional life. But this was not to be, and perhaps it would have suited ill with his impetuous character and eager temperament to have descended into the Dark Valley by "slow gradations of decay." Those who are left behind will remember him as he was in the fullness of his powers.

EDWARD FORSTER DRAKE-BROCKMAN, F.R.C.S. ENG.,

LIEUTENANT-COLONEL, I.M.S. (RETIRED).

THE death occurred at the beginning of the month of Lieutenant-Colonel E. F. Drake-Brockman, after a brief illness, at his residence at Hatch End. Born in 1843, the son of the late Lieutenant-Colonel H. J. Brockman, he entered St. George's Hospital, his contemporaries during his student days being Mr. Pickering Pick, the late Dr. John Cavafy, and the late Dr. T. T. Whipham. Passing first into and first out of Netley, he joined the Indian Medical Service with a special recommendation to the Government of India, and was stationed for his period of service at Madras. While his work varied with the official calls made upon him, he made a specialty of diseases of the eye and became an ophthalmologist of skill, availing himself to the full of great chances of experience. He was for many years superintendent of the Eye Infirmary, Madras, Fellow of the Madras University, and professor of physiology, anatomy, and diseases of the eye at Madras Medical College. He contributed extensively to literature on the subject of diseases of the eye, and devised an operation for extraction of cataract by the modified linear method.

Retiring from the Service in 1894, having received a special tribute of appreciation of his work from the Madras Government, he set up in practice in London, but the onset of a severe illness in the early months of 1916 compelled him to live a life of quietude and to give up all work. During the past year his condition had been one of growing enfeeblement of body, though ever he remained full of mental activity and energy. He contracted an attack of pneumonia and was only ill some 48 hours when the end supervened. He leaves a widow and married daughter and three sons, of whom one is a medical man.

JAMES MACKENZIE BOOTH, M.A., M.D., C.M. ABERD.

THE death of Dr. James Mackenzie Booth took place on May 8th at his residence in Aberdeen. Dr. Booth, whose father was a well-known practitioner in Aberdeen, was educated at the Aberdeen Grammar School and graduated in arts and medicine at the University of Aberdeen. After a voyage to India as surgeon on the *Duke of Buccleuch* he studied in Vienna for two years under Politzer and Urbantschitsch, returning immediately after to take up practice in Aberdeen. In 1880 he was appointed a medical officer of the Aberdeen Dispensary, which appointment he resigned on being made one of the assistant surgeons at the Aberdeen Royal Infirmary, where he had previously acted as anæsthetist and where he eventually became senior surgeon. In the same year he instituted a clinic for diseases of the ear, nose, and throat, which he conducted with marked success until within a few months of his death. Dr. Booth was the lecturer on diseases of ear, nose, and throat recognised by the University, and his classes were largely attended by students. He was for a number of years in command of the Aberdeen Company of the Volunteer Medical Staff Corps, and was a member of the business committee of the General Council of the Aberdeen University.

Dr. Booth was a man of extraordinary energy, with a disposition which was singularly buoyant, in spite of, latterly at any rate, somewhat indifferent health. His teaching was clear and practical, and he endeared himself to his students and a wide circle of friends by his kindly interest and unfailing and abounding hospitality. He never forgot his old students, and was always ready to further their interests by any means in his power. Dr. Booth was predeceased by his wife rather more than a year ago, and leaves one son, who is at the University of Aberdeen.

WEST COUNTRY CENTENARIANS. — Mrs. E. H. Farmer, of Colyton, and Mr. Henry Nicholas Bartlett, of Beer, recently celebrated the 101st and 100th anniversaries of their birthdays respectively.

THE SERVICES.

ROYAL NAVAL MEDICAL SERVICE.

Temp. Surg. Lieut. H. H. Bailey, who has been invalided on account of ill-health contracted in the Service, to retain his rank.

Temp. Surg. Lieut. J. N. M. Ross to be invalided on account of ill-health contracted in the Service, and to retain his rank.

Surg. Cdr. R. F. Bate, O.B.E. (retd.), to be Surgeon Captain (retd.) in recognition of services rendered during the war.

H. B. Padwick to be Surgeon Lieutenant.

ROYAL NAVAL VOLUNTEER RESERVE.

E. G. O'Shea to be temporary Surgeon Lieutenant.

ARMY MEDICAL SERVICE.

Major-Gen. (temp. Lieut.-Gen.) Sir C. H. Burtchaell, K.C.B., C.M.G., K.H.S., relinquishes his temporary rank on re-posting.

The undermentioned relinquish their temporary commissions on re-posting:—Temp. Major-Gen. Sir John Rose Bradford, K.C.M.G. (Major, R.A.M.C. T.F.); Temp. Cols. A. B. Soltau, C.M.G., C.B.E. (Col., A.M.S. T.F.), G. R. Murray (Major, R.A.M.C. T.F.), S. G. Barling (Lieut.-Col., R.A.M.C. T.F.), A. E. Webb-Johnson, D.S.O. (Capt., R.A.M.C. T.F.), C. G. Watson, C.M.G. (Capt., R.A.M.C. T.F.) (retains rank of Colonel).

Temp. Cols. W. P. S. Branson and C. H. Miller relinquish their commissions, and retain the rank of Colonel.

ROYAL ARMY MEDICAL CORPS.

Lieut.-Col. E. C. Hayes retires on retired pay.

Temp. Lieut.-Col. G. W. Fitzgerald (Major, R.A.M.C., T.F.) relinquishes his temporary commission on ceasing to be in charge of Fusehill War Hospital and on re-posting.

The undermentioned relinquish the acting rank of Lieutenant-Colonel: Capt. I. R. Hudleston (on re-posting), Temp. Capt. J. W. Bennett.

Temp. Capt. (acting Major) D. Fletcher to be acting Lieutenant-Colonel whilst specially employed.

Temp. Major (acting Lieut.-Col.) C. S. Young (Captain, R.A.M.C., T.F.) relinquishes his temporary commission on re-posting.

The undermentioned relinquish the acting rank of Major: Capt. J. M. MacKenzie. Temp. Capts. G. G. Buchanan, A. J. H. Boyton, J. P. Musson, B. Cox, P. M. Heath.

To be acting Majors:—Temp. Capts. R. T. Grant, R. Jamison. Whilst specially employed: Capts. C. T. V. Benson, G. G. Collet; Temp. Capts. W. V. Robinson, T. M. Bellew, P. L. Hope, A. J. Ferguson.

To be Captains: Capts. (from Special Reserve) J. G. Ronaldson, E. T. Burke (acting Lieutenant-Colonel), J. J. Magner, F. A. Roddy, D. C. Scott, H. A. Crouch, W. J. A. Laird, R. H. Williams (acting Major), D. McIntyre, W. McE. Snodgrass, A. J. Horne, A. J. Beveridge, T. Menzies, J. T. Scrogie, R. F. Walker, D. Cran, W. W. S. Sharpe; Capt. T. V. Oldham, from T.F.; Temp. Capts. L. W. Evans, W. S. Evans, F. C. A. Fleming, C. F. Anthonisz, N. E. Packer, A. W. Raymond, J. T. McConkey, H. E. P. Yorke.

To be Lieutenants and to be Temporary Captains—Captains from Special Reserve: J. A. Crawford, A. G. Stevenson, B. J. Daunt, M. McG. Russell, J. P. Macnamara, L. G. Blackmore, J. M. Morrison, J. C. Collins, J. C. Burns. Temporary Captains: C. L. Emmerson, G. D. Gripper, T. P. Buist, A. A. B. Scott, P. R. O'R. Phillips, P. G. Russell, W. E. Hodgins, H. A. Whyte-Venables, A. R. Barlas.

Officers relinquishing their commissions: Temp. Lt.-Cols. C. S. Myers and J. F. W. Silk, retain the rank of Lieutenant-Colonel; Temp. Hon. Lieut.-Col. E. C. Hoit, granted the rank of Major; Temp. Majs. C. H. M. Lowe, F. E. Crewe; Temp. Maj. H. E. L. Canney, retains the rank of Major; Temp. Hon. Maj. Sir Francis M. Farmer, retains the honorary rank of Major; Temp. Capt. and Bt. Maj. N. Duggan, retains the rank of Major; Temp. Capt. M. J. Loftus; Temp. Capt. H. Faulkner, granted rank of Lieutenant-Colonel. Temporary Captains granted the rank of Major: C. McM. Wilson, B. Hart, F. E. Fellden, H. J. Milligan, W. Morris, J. L. Jackson, A. H. M. Robertson, G. W. Fitz-Henry, J. V. Bates, D. H. Russell, H. W. Gabe, I. S. Wilson, H. R. Evans, G. F. Bird, H. C. W. Allott, C. Burnham, H. T. Mant, F. Henderson, A. A. O'Connor, A. J. H. Boyton. Temporary Captains retaining the rank of Captain: W. Edmondson, H. R. Davies, J. R. Payne, J. Devine, J. B. Cruickshank, V. E. Lloyd, E. M. Niall, T. P. Lingham, D. G. C. Tasker, W. J. McFeat, R. H. Beardsley, A. Morrison, H. Bourne, J. G. Gray, J. T. Lloyd, H. T. Howell, J. Loftus, J. M. Jarvie, L. M. Ingle, O. H. Bulloch, W. Wilson, N. McC. Hutchinson, A. C. Brown, D. C. Dobell, R. C. W. Spence, S. Hodgson, N. Davidson, E. C. B. Ibotson, R. J. Bentley, P. Milnes, J. C. Nixon, G. G. Butler, A. W. Hare, C. J. S. Dismorr, H. H. Jenkins, E. Mapother, H. Love, P. L. Pollard, W. R. Hills, S. H. Richards, R. Gauld, H. S. Jones, E. M. Eaton, H. S. Berry, W. F. Neil, F. W. Pollard, T. C. Mackenzie, A. P. Hart, H. M. Birkett, F. S. B. Fletcher, W. E. C. Dickson, C. A. Kenny, H. W. Latham, P. H. Robertson, D. O. Fairweather, H. J. Starling, R. Dow, G. Ferguson, W. W. Dickson, W. E. L. Fowler, W. W. Jones, S. H. White, H. W. B. Danaher, J. Magill, G. G. Macdonald, T. A. Clarke, S. M. Green, J. T. Grierson, J. B. Galligan, J. L. Schilling, E. J. Primrose, D. F. Dobson, J. L. M. Govan, A. Gilchrist, E. Montgomery, W. O'Donnell, W. Hamilton, P. Kitchin, H. A. Edwards, J. Lambie, E. A. Shirvell, C. A. A. Lever, A. G. L. Smith, G. D. Latimer, W. Gilmour, H. F. Smith, H. W. Dyke, R. D. Attwood, C. A. Hughes, S. Johnson, M. C. Burke, W. F. Croll, H. Harrison, J. V. Fiddian, W. B. Wamsley, E. Weatherhead, L. P. Costobadie, C. Tylor, R. Taylor, R. Boutwood, D. Wardrop, D. H. Trail, N. G. Thornley, R. H. Astbury, J. F. Taylor, R. L. Williams, W. D. D. Small, A. U. Webster, W. Fletcher, T. B. Evans, E. Emrys-Roberts, B. H. Peters, G. R. Lawless, W. T. Ohlmus, A. Barker, G. A. Lilly, C. R. Brown, A. K. Forbes, J. B. Burt, R. Harrington, T. T. Apsimon, F. D. Crew, H. C. Woodyatt, T. H. Body, W. J. Ronan, P. A. McCallum, W. H. F. Eales, T. E. Roberts, C. M. Geddie, J. L. Annan, F. F. Laidlaw, C. E. Evans, E. G. Goldie, H. A. Bell, J. W. Turner, N. F. Lock, F. Humphreys, H. M. Green, A. R. Taylor, P. E. Carroll, A. W. Matthew, H. Devine, F. I. Trimmer, R. Beesley, C. E. P. Husband, J. B. Macallan, R. D. Laurie, W. B. H. Dundee, G. S. Clark, C. U. Whitney, P. A. McCarthy, G. Mitchell, A. Lowndes, W. Campbell, G. D. Dawson, N. McI. Falkiner, J. H. Leckler, W. A. Muir, R. H. Hunter, S. M. Mackenzie, T. Fearnhead, H. E. Graham, R. L. Ley, J. Coutts, M. Du B. Ferguson, E. C. Girling, D. C. McCormick, H. Mather, J. B. Martin, J. A. C. Greene, J. R. Currie, J. R. Liddell, F. W. Browne, A. I. Cooke, C. A. Farrell, C. G. Kemp, W. C. Gavin, B. Blacklock, E. L. Galletly, J. Lunn, J. B. Low, W. C. Mence, C. G. MacMahon, W. M. Menzies, W. Mair, C. R. Gibson, W. T. McCutcheon, G. R. Halloran. Temp. Hon. Capts. J. F. Cooper, R. Marshall, J. R. Beaven, retain the honorary rank of Captain.

Temporary Lieutenants retaining the rank of Lieutenant: W. H. Jones, D. M. Barcroft, P. A. Mansfield, R. J. Smith, I. D. C. Howden, A. R. Wade, W. F. Tisdale, B. M. Wilson, C. F. Williams, C. R. Dykes, J. M. Reid, T. W. Lumsden, J. L. Phibbs, C. D. Lochrane, S. T. Rowling, J. J. Foran, P. Harwood, A. J. Hynd.

Canadian Army Medical Corps.

Temp. Lieut.-Col. P. Burnett to command a Canadian General Hospital and to be acting Colonel while so employed.

Temp. Capt. (acting Major) A. J. Lomas retains the acting rank of Major while employed on Board of Survey Inspection of Troopships.

The undermentioned Temporary Majors retire in the British Isles: S. R. Harrison (acting Lieutenant-Colonel), J. H. M. Bell, W. F. Nicholson.

Temp. Capt. A. Plouffe retires in the British Isles.

Temporary Captains to be acting Majors: D. A. Morrison, W. A. Richardson (while in command No. 2 Canadian Sanitary Section).

Canadian Army Dental Corps.

W. C. Sprague to be temporary Captain.

South African Medical Corps.

Temp. Capts. B. Sampson and A. R. Friel relinquish their commissions and retain the rank of Captain.

TERRITORIAL FORCE.

Lieut.-Col. W. B. Mackay relinquishes his commission and retains rank of Lieutenant-Colonel.

Capts. (acting Majors) F. A. W. Drinkwater and R. Waterhouse relinquish their acting rank on ceasing to be specially employed.

Capt. (acting Lieut.-Col.) W. Duncan relinquishes his acting rank on ceasing to be specially employed.

Capt. (acting Major) A. E. Ridsdale relinquishes his acting rank on vacating appointment of Deputy Assistant Director of Medical Services.

3rd Southern General Hospital: Capts. W. J. Foster and E. W. S. Rowland are restored to the establishment.

1st London General Hospital: Major W. McA. Eccles is seconded for service at the War Office. Capts. J. H. Thursfield and H. D. Clementi-Smith are restored to the establishment.

2nd Northern General Hospital: Capt. H. J. Macvean is restored to the establishment.

2nd Eastern General Hospital: Lieut.-Col. E. F. Maynard is restored to the establishment.

5th Southern General Hospital: Capt. J. E. F. Palser is restored to the establishment. Capt. H. Burrows is now seconded whilst holding a temporary commission in the R.A.M.C.

3rd Scottish General Hospital: Capt. D. Watson is restored to the establishment.

2nd London Sanitary Company: Major C. A. Spooner is restored to the establishment.

ROYAL AIR FORCE.

Medical Branch.—Major H. Pritchard to be Acting Lieutenant-Colonel whilst employed as President, R.A.F. Invaliding Board, from Sept. 6th.

E. L. Sergeant is granted a temporary commission as Lieutenant.

The undermentioned are transferred to Unemployed List: Capts. J. B. Stevenson (R.A.M.C.), J. M. Wyatt, W. G. Helsby, R. M. Dannatt, C. F. Graves, M. R. O. Wilson, A. Scott-Turner (acting Major), S. Robertson, Lieuts. G. M. Wishart B. R. B. Truman; I. M. Thomson.

Dental Branch.—Lieut. V. E. Mills is transferred to the Unemployed List.

INDIAN MEDICAL SERVICE.

The King has approved the promotion of the following officers:—To be Colonel: Lieut.-Col. J. K. Close. Temporary Lieutenants to be Temporary Captains: N. M. Bodas, P. Byramji, R. G. Dani, G. C. Agarwala, and K. L. Singer.

The King has approved the retirement of Capt. W. H. Riddell in consequence of ill-health.

Indian Defence Force Medical Corps.

The temporary rank of Major is granted to E. A. Houseman.

Lieut.-Col. Woolley has been appointed Inspector-General of Prisons in the United Provinces in place of Col. C. Mactaggart, who is shortly to retire. Lieut.-Col. B. H. Deare is acting as Principal, Medical College, Calcutta, vice Col. Calvert. Lieut.-Col. E. C. Waters officiates for Col. Deare. The services of Major J. Cunningham, Assistant Director, Research Institute, Kasauli, have been placed at the disposal of the Government of Madras Army Department. Capt. H. H. Mulholland, R.A.M.C., Deputy Assistant Director of Medical Services, is granted the temporary rank of Major. Major F. Halliday has been appointed Civil Surgeon of East Simla, in succession to Lieut.-Col. Sir James Roberts, late Surgeon to the Viceroy, who is to retire next month. Capt. P. G. Maguire, R.A.M.C., Military Medical Officer, has been appointed to hold Civil Medical Charge of Roorkee in addition to his own duties, vice Major G. F. Dawson, R.A.M.C. Lieut.-Col. H. J. Walton, whose services have been replaced at the disposal of the United Provinces, has been appointed by the Government of India Civil Surgeon, Saharanpur. Major W. J. A. Hogan has been transferred Civil Surgeon from Saharanpur to Bijnor.

R.A.M.C. FUND AND R.A.M.C. OFFICERS' BENEVOLENT SOCIETY.

The annual general meeting of the R.A.M.C. Fund will be held in the library of the R.A.M.C. College, Grosvenor-road, S.W., at 2.30 P.M., on Wednesday, June 11th, when the Director-General will preside. It is hoped that subscribers will freelyexpress their views on any point connected with the Fund. The annual general meeting of the R.A.M.C. Benevolent Society will take place immediately afterwards. Officers desiring information regarding these funds are requested to communicate with the secretary, 124, Victoria-street, London, S.W., beforehand, so that there may be no delay in dealing with any questions asked.

Medical News.

ROYAL COLLEGES OF PHYSICIANS OF LONDON AND SURGEONS OF ENGLAND.—At a meeting of Comitia of the Royal College of Physicians of London on April 24th and of the Council of the Royal College of Surgeons of England on May 8th, diplomas of L.R.C.P. and M.R.C.S. were respectively conferred upon the following candidates who have passed the Final Examination of the Conjoint Board and have complied with the by-laws of the Colleges:—

John Harrison Allan, Liverpool Univ.; Bernard Archibald Astley-Weston, Bristol Univ.; Marjorie Back, Royal Free Hosp.; Charles William Bennett, Melbourne Univ. and St. Bart. Hosp.; *Harold Buck, Toronto Univ. and Univ. Coll. Hosp.; Ernest Elwin Carter, St. Thomas's Hosp.; Richard Alphonso Cooke, Liverpool Univ.; Idris Davies, Cardiff and Westminster Hosp.; *William Siegfried Dawson, Oxford Univ. and St. Thomas's Hosp.; Theodore Henry Dobrashian, Univ. Coll. Hosp.; *Lucien Duble, Louvain and St. George's Hosp.; Dwijendra Nath Dutt, Univ. Coll. Hosp.; Sylvia Victoria Elman, Royal Free and St. Mary's Hosps.; Frederick Augustus Evans, Manchester Univ.; James Fanning, London Hosp.; Dennis Herbert Gaffen, Univ. Coll. Hosp.; Ralph Byron Gibson, Sheffield Univ.; John Gilmour, Durham Univ.; Philip Eldon Gorst, Liverpool Univ.; St. George Bernard Delisle Gray, Guy's Hosp.; Gwenvron Mary Griffiths and Margaret Hammond, Royal Free Hosp.; Benjamin Charles Hardiman, Queen's Univ., Kingston; William Rufus George Harris, London Hosp.; Cyril Bowdler Henry, Westminster Hosp.; Arthur Robert Hill, Middlesex Hosp.; Thomas Lucas Hillier, Cambridge Univ. and St. Thomas's Hosp.; Frederick Greig Hobson, Oxford Univ. and St. Thomas's Hosp.; Claude Osborne Hudson, Sheffield Univ.; Reginald Jenner-Clarke, London Hosp.; Hassan Kamal, King's Coll. Hosp.; Muriel Mercer Kenworthy, Royal Free Hosp. and Liverpool Univ.; Madari Audia Keshvalu, Hyderabad and Univ. Coll. Hosp.; Paul Bruno Kittel, Cambridge Univ. and St. Bart.'s Hosp.; Allan Osborne Knight, Middlesex Hosp.; John Neil Leitch, St. Bart.'s Hosp.; Lillian Lowenstein, Royal Free Hosp.; Leslie Lyne, Guy's Hosp.; Stuart Douglas McAusland, Liverpool Univ.; John Joseph Myles MacDonnell, St. Thomas's Hosp.; William Kellock McKay, Guy's Hosp.; Edgar Duncan Macmillan, St. Bart.'s Hosp.; Girdharlal Tejpal Mody, Bombay and Bristol Univs.; Jacobus Gideon Nel, Edinburgh Univ. and Charing Cross Hosp.; Charles Frederick Newman, Birmingham Univ.; James Love Nisbet, Iceland and St. Bart.'s Hosp.; Daniel O'Donovan, Cork and Univ. Coll. Hosp.; James Lucius Camillo O'Flyn, St. George's Hosp.; Edward Rowley Peirce, Birmingham Univ.; Francis Lionel Pickett, Cambridge and Manchester Univ.; Norah Dorothy Pinkerton, Royal Free Hosp.; Lillie Mary Pinson, Birmingham Univ.; William Retkan, Manchester Univ.; Hilda Winifred Richards, Royal Free and St. George's Hosps.; William Arthur Richards, Cardiff and Charing Cross Hosp.; John Charles Ryder Richardson, London Hosp.; Edward Douglas Thomas Roberts, St. Thomas's Hosp.; Harold Shillito Robinson, London Hosp.; John Southmead Rogers, King's Coll. Hosp.; Harry Thomas Roper-Hall, Birmingham Univ.; John Clement Russell, Cambridge Univ. and London Hosp.; Robert James Saunders, London Hosp.; Albert Ernest Sawday, Guy's Hosp.; Marco Ludwig Schroeter, Zurich Univ.; Ernest Livingston Sergeant, London Hosp.; Eric Norman Showell-Rogers, Cambridge Univ. and St. Thomas's Hosp.; William Stanley Sykes, Cambridge Univ. and St. Bart.'s Hosp.; Guy Burford Tarring, Oxford Univ. and Univ. Coll. Hosp.; Aubrey Clifford Teuten, St. Mary's Hosp.; Alfred Howard Turton, Birmingham Univ.; Eric Roland Webb, Guy's Hosp.; Don Edmund Wijewardene, Cambridge Univ. and St. Thomas's Hosp.; Simon Cyril de Silva Wijeyeratne, Univ. Coll. Hosp.; Sidney Wolff, Guy's Hosp.; Man Wong, Cambridge Univ. and St. Thomas's Hosp.; and William Worger and Alfred Ernest Young, Bristol Univ.

*M.R.C.S. diploma granted on April 10th.

ROYAL COLLEGE OF PHYSICIANS OF LONDON.—An extraordinary Comitia of the Royal College of Physicians was held on May 8th, Sir Norman Moore, the President, being in the chair. The following Members elected to the Fellowship at the last meeting were admitted as Fellows: Dr. J. D. Stanley, Dr. E. B. Leech, Dr. H. Devine, Dr. H. L. Tidy, Dr. G. A. Ander, Dr. D. H. de Souza, Dr. A. E. Gow, Dr. A. E. Naish, Dr. R. S. Frew, Dr. G. H. Hunt, Dr. P. Hamill, and Dr. J. L. Birley.—It was left to the President to nominate delegates to represent the College at the congress to be held by the Royal Sanitary Institute at Newcastle-on-Tyne.—A letter was received from Dr. R. Pratt asking leave to resign his Membership of the College. This was granted.—The President then dissolved the Comitia.

ROYAL COLLEGE OF SURGEONS OF ENGLAND.—An ordinary meeting of the Council was held on May 8th, Sir George Makins, the President, being in the chair.—Colonel J. G. Adami, C.A.M.C., and Lieutenant-General Sir John Goodwin were introduced, and after signing the by-laws and making the required declaration were admitted Fellows of the College.—Mr. J. A. Cairns Forsyth was introduced and the President presented to him the Jacksonian prize for the year 1918, together with a document declaratory of the award.—It was resolved to grant to 74 successful candidates diplomas of Membership and to issue to 24 successful candidates licences in dental surgery.—Mr. Cuthbert S. Wallace, surgeon and lecturer on surgery at St. Thomas's Hospital, was elected a member of the Court of Examiners.—The President reported that he had undertaken to take part in a deputation in opposition to the Dogs' Protection Bill, to be received by the Home Secretary on May 9th. The Council then passed the following resolution unanimously:—

The Council of the Royal College of Surgeons of England are of opinion that the Dogs' Protection Bill will seriously impede the progress of medical science in this country, and they view with grave concern this proposal to prohibit a form of research through which knowledge of great value as regards the causes and treatment of disease has been acquired in the past.

Licences to practise dentistry were conferred upon the following 24 candidates who have passed the requisite examinations and have complied with the by-laws:—

Cyril Arthur Duvall Bishop, Guy's Hosp.; Leonard Harry Bradbeer, Bristol Univ.; Basil Clothier, Liverpool Univ.; Samuel Hyman Coplans, Geoffrey Deeks, Dudley Keverne Gaskill, Joseph Walter Greenwall, John Harvey Havers Griffin, and John Herbert, Guy's Hosp.; Herbert William Hill, Cambridge Univ., Middlesex and Royal Dental Hosps.; George Hubert Howe, Guy's Hosp.; Lionel Beresford James, Bristol Univ.; James Joseph Jordan, Pennsylvania Univ. and Guy's Hosp.; Sholam Meerowitz Kropman, Manchester Univ. and Guy's Hosp.; Carol Pinson Lake, Guy's Hosp.; William Eric Milton, Middlesex and Royal Dental Hosps.; Charles Aston Moody, Pennsylvania Univ. and Guy's Hosp.; Edith Mynott Norman and Mary Jane Ripley, Royal Free and National Dental Hosps.; Cyril Fryer Smith, Liverpool Univ.; S. S. Tweney and David Cornelius van der Spuy, Guy's Hosp.; Ina Valentine Vincent, Royal Free and National Dental Hosps.; and Ronald Harold Vivian Whybro, Middlesex and Royal Dental Hosps.

UNIVERSITY OF CAMBRIDGE: VACATION COURSE IN ADVANCED PATHOLOGY.—A course of lectures and practical work on pathology will be given in the long vacation for senior students preparing for the Third M.B. Examination. The course, which will extend from July 3rd to August 13th inclusive, will include lectures on the following subjects:—

Protozoology and Parasitology (Professor G. H. F. Nuttall, Dr. D. Keilin, and Dr. E. Hindle); Pathology of Nervous System (Dr. F. W. Mott); Tumours (Dr. Nicholson); Special Pathology and Morbid Anatomy (Mr. T. S. P. Strangeways); Bio-Chemistry (Professor F. G. Hopkins, Mr. J. Barcroft, and Dr. J. R. Marrack); Bacteriology (Dr. G. S. Graham-Smith and Dr. W. H. Harvey); Epidemiology (Mr. M. Greenwood); and Therapeutics (Dr. W. E. Dixon).

The fee for the course will be £10 10*s*. Students intending to take the course should forward their names to Mr. Strangeways, Pathological Laboratory, Cambridge, from whom further information and time-table may be supplied.

ABERDEEN UNIVERSITY CLUB, LONDON.—The sixty-first half-yearly dinner of the club will be held at the Imperial Restaurant, 60 and 62, Regent-street, W., on Thursday next, May 22nd, at 7.30 P.M., the Duke of Richmond and Gordon in the chair. All communications should be made to Dr. W. A. Milligan, 11, Upper Brook-street, W. 1, and those who intend to be present should state the number of guests whom they propose to bring. The dinner tickets, exclusive of wine, are 10*s*. 6*d*.

THE SOUTH DEVON AND EAST CORNWALL HOSPITAL.—The seventy-ninth annual meeting of the subscribers to this charity was recently held. The medical report stated that 1623 in-patients had been admitted. The financial statement showed a deficit of £2200 on the year's working. It was decided to alter the rules of the institution to enable the appointment of two labour representatives on the committee.

KING EDWARD'S HOSPITAL FUND FOR LONDON.—At a meeting of the governors and General Council held in December last (see THE LANCET, Dec. 28th, 1918, p. 887) £200,000 were distributed among various hospitals and convalescent institutions, and on May 6th of this year the formal annual meeting was held at St. James's Palace, when the Prince of Wales, as President of the Fund, occupied the chair on his release from the arduous duties imposed by the war. During this period, and also during the Prince's minority, Lord Cambridge, Lord Iveagh, and the Speaker of the House of Commons have ably carried on the work of the Fund, and to them the Prince expressed the King's and his own thanks for the able way in which they had fulfilled their duties. Lord Revelstoke, the honorary treasurer, in presenting the account of receipts and expenditure and the balance-sheet for the year 1918 reminded the General Council that when last autumn it was decided to increase the distribution from £190,000 to £200,000, the estimated income for the year, after allowing for expenses, fell short of that sum by about £6000. The Fund had, however, received an unexpected legacy which resulted in a surplus of nearly £3000. In the report of the General Council reference is made to the inquiry into the question of pensions for hospital officers (see THE LANCET, April 5th, p. 573) made by a subcommittee of the Executive Committee, and His Royal Highness, in commenting on the report, stated that an adequate pension scheme was thus recognised as a legitimate and even a profitable branch of hospital expenditure.

BRITISH HOSPITALS ASSOCIATION.—The annual meeting of the association will be held to-day (Friday, May 16th), at 3 P.M., at the London Hospital, under the chairmanship of Lord Knutsford. At the close of the annual meeting a conference will be held, when Sir Napier Burnett, M.D., will open a discussion on "The Relation of the Voluntary Hospitals to the State, with Special Reference to the Ministry of Health Bill."

SCOTTISH BOARD OF HEALTH BILL.—The Royal Faculty of Physicians and Surgeons of Glasgow, at a meeting held on May 5th, unanimously passed the following resolutions, which they have submitted for the consideration of the Right Honourable Robert Munro, K.C., M.P., Secretary for Scotland.

1. The Faculty is of opinion that no adequate opportunity has been given to the medical profession, which ought to be the paramount authority in matters concerning health, for the discussion of the Scottish Board of Health Bill.

2. The Faculty is of opinion that the medical profession is not sufficiently represented on the proposed Board. The Faculty considers that, as the health of the community is to be under the supervision of the Board of Health, the said Board should include general medical practitioners of wide experience, and the Faculty regards any Board formed without such members as quite unsuitable for obtaining the objects which the Bill contemplates.

3. The Faculty is strongly of opinion that there ought to be a permanent Advisory Committee composed in part of medical practitioners practising in Scotland, and elected by the profession, such Advisory Committee to meet at least quarterly.

The protest is signed by Dr. Freeland Fergus, President of the Faculty.

LITERARY INTELLIGENCE.—Messrs. Williams and Norgate announce the appearance of an "Index Generalis," or "Year-book of the Universities," published, with the encouragement of the Minister of Public Instruction, under the direction of Dr. R. de Montessus de Ballore, professor in the Catholic University of Lille, by Mm. Gauthier-Villars in Paris. The Year-book recounts the organisation of the faculties and high schools in all countries other than Germany, Austro-Hungary, Turkey, and Bulgaria. The price in paper cover is 18 fr., bound 21 fr.

BRITISH HERB GATHERING.—Owing to the shortage of some drugs, and also to the fact that many valuable medicinal herbs are available in Somerset, a systematic collection is to be organised by the Somerset Herb Society.

COURSES in Anatomy and Physiology for the Primary Examination for the Fellowship of the Royal College of Surgeons of England will be held by Mr. T. B. Johnston and Mr. D. T. Harris respectively, at University College, London, beginning on June 3rd. This course will be suitable not only for the ordinary examination, but also for the special examination in November for R.A.M.C. officers. Full particulars can be obtained from the secretary of the college.

Mr. W. Turner, M.S., F.R.C.S., the senior surgeon, who was appointed in the year 1896, and Sir Malcolm Morris, K.C.V.O., F.R.C.S., surgeon for diseases of the skin, who joined on the founding of the London School of Clinical Medicine in 1905, have resigned office from the honorary medical staff of the Dreadnought Seamen's Hospital at Greenwich. They have been elected members of the consulting staff in recognition of the valuable services they have rendered the corporation.

THE AMERICAN ACADEMY OF MEDICINE.—The list of subjects chosen for discussion at the next meeting of the American Academy of Medicine, to be held in June, is an interesting indication of the deep change in the views, scope, and ideals of the medical profession in the United States, which the war has helped to bring about. This change is so deep as to be almost fundamental, and the opinion is being widely expressed that the work of the doctor in the future is to be more intimately related to broad social problems, and that the field of the practising physician is inevitably to be more closely related to that of the specialist in public health. The first four subjects to be discussed relate to the problem of social insurance, and deal with the whole social problem of the soldier's family. There will also be a discussion on the public school curriculum, on the effects of rationing of foodstuffs on parenthood, on young children, and on the race. Several papers are to be read on the effects of the war on the family, on marriage and birth-rates, and on the care of children. A section is given up to the effect of the war on the educational system, and the whole question of wages and employment in their relation to health is to be considered. Social insurance as a proposed remedy for poverty, sickness, and unemployment will be discussed at length.

Parliamentary Intelligence.

HOUSE OF LORDS.

THURSDAY, MAY 8TH.

Ministry of Health Bill.

The House went into Committee on the Ministry of Health Bill. On Clause 2 (General Powers and Duties of Minister in Relation to Health),

Lord BLEDISLOE said that at a later stage he would move as a new clause: "The Minister shall have power to institute such proceedings as may be necessary to enforce compliance with the law relating to the sale and advertisement of any patent, secret, or proprietary remedy or appliance." In order to prepare the way, he moved to insert in the present clause, which contemplated the transference of certain duties to the Minister of Health, the words "or conferred upon him." This amendment was agreed to.

Lord SYDENHAM moved to add to the duties to be performed by the Minister of Health, "and for maintaining hygienic conditions of labour in mines, factories, and workshops, and on board mercantile shipping." He believed that if the amendment were accepted, it would confer actuality on what he regarded as a disappointing Bill.—Viscount HALDANE objected to the amendment on the ground that it would involve difficulties, the principle of which was that it would mean the setting up of a new staff of inspectors under the Ministry of Health, whose work would overlap that of the existing inspectors under the Departments charged with the inspection of mines, factories, and workshops, and merchant shipping.—After further discussion the amendment was withdrawn.

The Question of Patent and Proprietary Medicines.

Lord BLEDISLOE moved an amendment giving the Minister power to take measures for "the avoidance of fraud in connexion with alleged remedies" for the prevention and cure of diseases. On his initiative a Select Committee of the House of Commons was set up in 1912 to investigate the question of patent and proprietary medicines. The report of the Committee, which was presented on the very day of the outbreak of war, was the most damaging that a Select Committee had ever presented. It showed a network of fraud and deliberate crime against the well-being of the nation, which was unparalleled in any other civilised country. The chief offenders were those who preyed upon the weaknesses, particularly the sexual weaknesses, of mankind, by advertising preparations claiming to cure incurable diseases. This was a matter that could not be trifled with or unduly deferred. In the past this matter did not come within the purview of any particular department, and his desire was to bring it within the functions of the new Ministry of Health, so that a stop could be put to these nefarious practices.

Viscount SANDHURST, speaking for the Government, said he failed to see how the acceptance of the amendment would advance the views held by the noble lord. It would merely cumber the new Ministry with duties it could not now perform, and obligations it could not now fulfil. He could, however, give an undertaking that the Local Government Board would consider without delay the matter, and as soon as possible make proposals to Parliament for whatever new powers were needed to bring about the necessary action.

Lord BUCKMASTER said it was impossible to over-rate the importance of the question raised by these amendments. A cursory glance at the report of the Select Committee was sufficient to show that at the present moment this country was at the mercy of a gang of people who in many cases were quite destitute of honour or scruple, and who were busily engaged by fraudulent or dishonest means in vending drugs and food that in many cases were absolutely dangerous to the health of the people by whom they were consumed. It was quite plain that the present remedies were ineffectual, and one of the reasons why they were so was that they never knew the Department upon whom the duty of taking action rested. It was precisely to avoid this confusion in the future that this Ministry was being set up, and, if that were so, he could not see why the noble viscount should suggest that it was not right, at the inception of the Ministry, to burden it with the very powers which it was created to enforce.

The Marquess of SALISBURY asked whether the Government would undertake to consider this matter between now and the report stage.

The Marquess of CREWE said that the point at issue was whether it was possible that the new Ministry of Health should take over now, as he thought they ought unquestionably to do, all the powers of a medical and hygienic kind that were now entrusted to the Privy Council. It might be that in time all these functions ought to be handed over to the new Ministry, and perhaps the noble viscount in charge of the Bill and the leader of the House (Earl CURZON) would consider whether it was possible to give his noble

friends some indication that they should be taken over at the earliest possible date.

Viscount SANDHURST said that after what had been said he would undertake to consult the President of the Local Government Board on this question, and would at a later stage inform the House of the result.—The amendment was withdrawn.

Transfer of Powers.

On Clause 3, which deals with the transfer of powers to the Ministry of Health,

Lord DOWNHAM moved to delete a proviso under which the Minister of Health may make arrangements with the Board of Education respecting the submission and approval of schemes of local education authorities in respect to the payment of grants to education authorities. His aim, he said, was to have one Minister and one Minister alone responsible for the health of the child.—Viscount SANDHURST, in resisting the amendment, said that the proviso was inserted merely for the convenience of administration.—After some discussion a division was challenged, when the amendment was lost by 37 votes to 24.

An amendment was agreed to on the motion of Lord MUIR MACKENZIE including in the powers that could be transferred "those relating to the relief of the poor or otherwise."

The clause as amended was added to the Bill, and the Committee proceedings were adjourned.

HOUSE OF COMMONS.

WEDNESDAY, MAY 7TH.

British-made Morphia.

Sir JAMES AGG-GARDNER asked the President of the Board of Trade if he would state the amount and value of British-made morphia exported in each of the years 1911 to 1918, and, if he could, which were the chief countries receiving such morphia.—Sir A. GEDDES replied: The quantities and values of British-made morphia and morphia salts registered as exported from the United Kingdom in each year from 1911 to 1918 inclusive were as follows:—

	Ozs.	£		Ozs.	£
1911 ...	208,546	81,808	1915 ...	295,572	200,734
1912 ...	276,572	151,351	1916 ...	225,611	154,544
1913 ...	406,154	193,354	1917 ...	124,593	114,193
1914 ...	504,020	208,717	1918 ...	136,837	170,216

The principal countries to which these exports were consigned included: Germany (prior to the outbreak of war), Russia, France, Japan, and (in 1917 and 1918) Canada.

The Opium Convention.

Sir JAMES AGG-GARDNER asked the Prime Minister whether, in view of the incorporation of the effectuation of the opium convention in the covenant of the League of Nations and the amendment of pharmacy law which must follow the enforcement of the convention, he was proposing to introduce legislation for that purpose this session.—Mr. SHORTT (Home Secretary) replied: Instructions have already been given for the preparation of a Bill on the subject, but I cannot say at present whether it will be possible to pass it into law this session.

Sanitary Officer and Service in Russia.

Major BORWICK (by private notice) asked the Secretary for War if it was the fact that Captain H. Grenville Moss, Royal Army Medical Corps (Territorial Force), who had declined to volunteer for service in North Russia, had now been ordered to proceed to Blackpool preparatory to sailing for that country; whether he was aware that this officer had served in His Majesty's Forces since the first day of the war; whether, in view of this officer's service throughout the whole of the war and the assurances given to the House that none but volunteers would be sent to Russia, he would give instructions that the orders for this officer to proceed to Russia should be cancelled.—Mr. CHURCHILL replied: Captain H. Grenville Moss, Royal Army Medical Corps (Territorial Force), did decline to volunteer for service in North Russia. He was put under orders on April 17th to command a sanitary section proceeding to North Russia. In consequence of his appeal he was notified on April 26th that his orders were in abeyance, but that he might be required later. Endeavours were made to find a substitute, but without success, and he was therefore again placed under orders on April 30th. It is realised that he has served since August, 1914, and as an officer since June, 1915, but although he is eligible for demobilisation his age is under 31 and his business is being carried on by his brother. Many officers with greater claims to release on the grounds of personal hardship are being necessarily retained. Further, he is not a medical man, and his claim from the civil community point of view is not an urgent one. He has shown special capabilities in sanitary work, for which urgent duty he is now required and for which no volunteers are available. I am certainly not prepared in any way to relax the claims which may be made upon a person holding the King's commission in regard to a duty of real emergency connected with the rescue and extrication of a British force from a position of danger. Men have volunteered in plenty, and I am very much surprised that any officer who knows he is required should endeavour to raise objections.

THURSDAY, MAY 8TH.

Tuberculosis Treatment in London.

Sir KINGSLEY WOOD asked the Secretary to the Local Government Board, as representing the Insurance Commissioners, whether he was aware of the continued delay in arriving at a comprehensive scheme for treatment of tuberculosis in London; and what action he proposed to take in the matter.—Major ASTOR replied: I am aware of the delay, which is much to be regretted. Conferences between the London County Council and the London Insurance Committee have not, so far, led to a complete solution of the difficulties which have lain in the way of the production of a satisfactory comprehensive scheme for the treatment of tuberculosis in London. The matter is engaging my personal attention, and I hope that an early settlement may be arrived at.

Surplus Army Medical Equipment.

Colonel WARD-JACKSON asked the Secretary for War whether opportunity would be afforded to local authorities to obtain for the benefit of the aged, the cripples, and incurables in their district invalid chairs, wheeled cots, &c., from the military hospitals which were now being closed down.—Mr. CHURCHILL replied: The disposal of all surplus Army stores is in the hands of the Surplus Government Property Disposal Board of the Ministry of Munitions, to whom applications should be addressed by local authorities. I understand that the President of the Local Government Board is about to make certain proposals for utilising surplus medical and other stores for the various health services of the country, and the whole question will, no doubt, be sympathetically considered.

Shell-Shock Treatment.

Sir MONTAGUE BARLOW asked the Pensions Minister whether he would have investigation made into the case of Private Joseph Burgin, No. 240,271, York and Lancaster Regiment; whether this man, who was suffering from shell-shock, applied for treatment in August, 1918; whether treatment was ordered by a medical board and subsequently by a private practitioner who was a medical referee to the local war pensions committee; and whether he had asked to be sent to the Pilkington Special Hospital, St. Helens, where he was previously treated, but in spite of repeated applications during the past seven months, in addition to letters to the treatment branch of the Ministry direct, nothing so far had been done.—Sir L. WORTHINGTON-EVANS replied: This case was referred to the Special Medical Board in February last, and after investigating it the board made an appointment for April 9th for an examination. Private Burgin did not attend, and another appointment is being made for a day next week. In the meantime Private Burgin is under home treatment and is drawing full allowances.

Venereal Disease.

Mr. GILBERT asked the President of the Local Government Board whether his department had made any financial grant to the National Council for Combating Venereal Disease; if so, would he state what the amount was for both last year and this year; if any conditions were made with the grant; and would he state what those conditions were.—Major ASTOR replied: A grant of £8000 was paid to the Council towards their expenditure for 1918 on various measures for educative publicity work, and £5000 has similarly been paid towards their 1919 work. The question of a further grant for this year is not yet settled. The measures thus aided are discussed with the Board, and are taken by the Council subject to the Board's concurrence.

Pure Milk Supply.

Dr. NATHAN RAW asked the President of the Local Government Board whether, having regard to the importance of a pure milk-supply to the children of the community, he would consider the necessity of a complete Government control over the production and distribution of milk throughout the country.—Dr. RAW also asked the Parliamentary Secretary to the Board of Agriculture whether, having regard to the fact that about 20 per cent. of the milk at present supplied to the public contained the living germs of tuberculosis, he would at once appoint a special expert committee to consider the best means of rendering this milk a safe food for children to drink.—Major ASTOR replied: The whole question of the milk-supply is receiving careful consideration.

Brigadier-General Sir OWEN THOMAS asked the Parliamentary Secretary to the Board of Agriculture whether, in view of the increase in tuberculous cattle in this country and the consequent danger to young children due to the consumption of infected milk, he would put in force the order for compulsory notification by the owners of such

cattle, which was suspended in 1914, and secure to the owners a fair compensation for cattle compulsorily slaughtered.—Sir A. GRIFFITH-BOSCAWEN replied: The Tuberculosis Order of 1914 was issued under powers given to the Board by the Diseases of Animals Act, 1894, with a view to preventing the spread of tuberculosis in cattle. It has been decided to re-issue the Order as soon as the Milk and Dairies Act comes into operation. The Order provides for compensation according to scale for cattle slaughtered under its provisions.

MONDAY, MAY 12TH.

Prevention of Anthrax Bill.

The House went into Committee on the financial resolution of the Prevention of Anthrax Bill, Mr. WHITLEY in the chair.

Sir HAMAR GREENWOOD (Under Secretary for the Home Office) explained that the resolution was a necessary stage in carrying through this Bill, which was intended to prevent a loathsome disease affecting those engaged in the woollen industry.

Sir F. BANBURY asked how much it was proposed to spend under this resolution. The country had got on very well without this Bill for a good number of years, and he did not remember a large number of cases of anthrax during the last 20 years. He moved to insert at the end of the resolution a clause to the effect that the sum to be expended in any one year should not exceed £10,000.

Sir D. MACLEAN said no doubt the measure was an excellent one, but the only information given in the official memorandum on expenditure was that a special sub-committee estimated the capital cost of the first station at about £18,000 at pre-war prices.

Sir H. GREENWOOD said that since 1896 there had been between 300 and 400 cases of anthrax, and of these about 25 per cent. had been fatal. The committee who had considered the subject came unanimously to the conclusion that the method provided for in the Bill would ultimately stamp out the disease. It was very difficult to give in precise detail the expenditure which might be necessary. The cost might be twice the sum of £18,000 which had been mentioned.

Sir W. WHITLA said that in this Bill they were dealing with the lives of human beings, not of dogs, and he urged that the Committee should not tie the hands of the Government.

After further discussion, Sir H. GREENWOOD said so much was he impressed with the right of the House to the fullest possible information on every detail of the proposed resolution that he would agree to withdraw the resolution, and, if possible, submit a more detailed account. He expressed the hope that when the matter next came before the House it would pass through all its stages. He moved to report progress.

Progress was reported and the House was resumed.

Physical Unfitness of the Nation.

Captain LOSEBY asked the Prime Minister if, in view of the alarming state of physical unfitness disclosed by the examination of recruits for the purpose of the war, he would consider the advisability of appointing a Royal Commission to examine the whole question of physical training of children throughout the schools of the country, in order that full advantage might be taken of the latest experience upon the subject, and to make recommendations.—Mr. BONAR LAW replied: I have consulted my right honourable friend, the President of the Board of Education and the Education Authorities of Scotland and Ireland, and I am informed that they are fully alive to the great importance of taking steps to improve the physical training which is given in schools which to some extent has necessarily been curtailed during the war. The Government does not consider the appointment of a Royal Commission necessary.

Spirits in Cases of Illness.

Dr. NATHAN RAW asked the Chancellor of the Exchequer whether, having regard to the high price of brandy, he would give the necessary permission for the sale of a half-bottle of spirits in cases of illness and on the certificate of a doctor.—Mr. A. CHAMBERLAIN said he assumed that the question referred to sales of spirits at retail off-licence premises in England, where in accordance with the law the quantity sold to any person at one time may not be less than a reputed quart bottle. There is no prohibition against the sale of half-bottles of spirits at on-licence premises.

Health Council for Wales.

Sir OWEN PHILIPPS asked the President of the Local Government Board whether, in connexion with the Ministry of Health, he proposed to set up a health council for Wales; and whether the various health organisations would be represented on such council, and particularly if he would consider the advisability of giving representation to the Priory for Wales of the Order of St. John of Jerusalem.—Dr. ADDISON replied: The reply to the first part of the question is in the affirmative. I shall be glad to consider suggestions as to suitable bodies to propose names for the purpose.

Hospital Accommodation for Civil Needs.

Mr. SWAN asked the Secretary of State for War if he would consider the advisability of delaying the demobilisation of the Northumberland War Hospital, Gosforth, Newcastle-on-Tyne, for a period of at least six months, so as to leave the Royal Infirmary free to meet the urgent civilian needs for hospital accommodation and treatment, as already great difficulty was experienced in meeting the needs of the large number of civil patients who were waiting for treatment at the Royal Victoria Infirmary, which was the chief hospital for the city of Newcastle-on-Tyne and the counties of Northumberland and Durham, seeing that the waiting list of this institution contained 2000 civil cases, many of whom were in need of early admission to the hospital.—Mr. CHURCHILL replied: Arrangements have been made with the Board of Control whereby the Northumberland War Hospital will continue in War Department occupation until Dec. 31st, 1919. It is hoped by this means to ease considerably the strain on the civilian establishments.

Hospital Treatment for Soldiers, Sailors, and Pensioners.

Mr. SWAN asked the Secretary of State for War if he would see that adequate provision was made for the treatment of soldiers, sailors, and pensioners in the counties of Northumberland and Durham before the Government decided to close the 1st Northern General Hospital and the Northumberland War Hospital, as otherwise hardship would be inflicted upon soldiers, sailors, and pensioners.—Mr. CHURCHILL replied: As I have just stated, the Northumberland War Hospital will remain open until December 31st next. The closing of the 1st Northern General Hospital is dependent on the completion of huts, now being erected, to accommodate orthopædic cases. The total accommodation for patients at these two hospitals will not therefore be reduced even after the 1st Northern General Hospital is given up.

Appointments.

Successful applicants for vacancies, Secretaries of Public Institutions, and others possessing information suitable for this column, are invited to forward to THE LANCET *Office, directed to the Sub-Editor, not later than 9 o'clock on the Thursday morning of each week, such information for gratuitous publication.*

ABRAHAM, J. JOHNSTON, D.S.O., M.D. Dub., F.R.C.S. Eng., has been appointed Surgeon to Out-patients at the London Lock Hospital.

DANIELS, D. W., M.B., B.S. Lond., a Medical Referee under the Workmen's Compensation Act, 1906, for County Court Circuit No. 19.

FORSTER, ANNIE M. C., M.B., B.S. Lond., Maternity and Child Welfare Medical Officer for the county of Somerset.

IRWIN, S. T., F.R.C.S. Edin., CRYMBLE, P. T., F.R.C.S. Eng., Assistant Surgeons, and THOMSON, W. W. D., M.B., Ch.B. Belf., and COATES, F., M.D. R.U.I., Assistant Physicians, to the Royal Victoria Hospital, Belfast.

MENCE, W. C., L.R.C.P. Lond., M.R.C.S., Public Vaccinator for the Dalwood and Stockland districts by the Axminster Board of Guardians.

O'FLAHERTY, P. E., M.B., B.S. Irel., Medical Officer to His Majesty's Prison, Belfast.

TRIMBLE, C. E., L.R.C.P. & S. Edin., L.R.F.P.S. Glasg., Medical Officer for the Cheriton Fitzpaine district by the Crediton Board of Guardians.

YOUNG, J., M.D. Glasg., Commissioner of Medical Service under the Minister of Pensions for the South-Western Region, in succession to Sir James Porter, K.C.B., K.C.M.G., resigned.

Certifying Surgeons under the Factory and Workshop Acts:—TODD, F. R., M.B., B.S. Lond. (Creech St. Michael); BYRD, J. D., L.R.C.P. Irel., L.F.P.S. Glasg. (Mold); BREWIS, R. A., M.D. Edin. (Dursley).

Vacancies.

For further information refer to the advertisement columns.

Bedford County Hospital.—H.P. £150.

Belfast, Queen's University.—Lectureship in Pharmacology. £450.

Birkenhead and Wirral Children's Hospital.—H.S. £150.

Birmingham and Midland Ear and Throat Hospital.—H.S. £400.

Birmingham and Midland Hospital for Skin and Urinary Diseases.—Bacteriologist. £100.

Birmingham General Dispensary.—Locum Tenens, R.M.O. £3 3s. a week.

Birmingham General Hospital.—H.S. £125. Also Cas. H.S. £100.

Bristol General Hospital.—Dental H.S. £250.

Burnley Union.—Res. Asst. M.O. £300.

Canning Town Women's Settlement Hospital, Balaam-street, Plaistow, E.—Female Physician and Asst. Physician.

Cardiff, Glan Ely Hospital.—Asst. R.M.O. £300.

Charing Cross Hospital, Agar-street, W.C.—Clin. Asst. Skin Dept.

Charing Cross Hospital Institute of Pathology.—Chem. Path. £200.

Chester, City and County of the City.—Asst. M.O.H. £400.

Chesterfield and North Derbyshire Royal Hospital.—Sen. H.S. £300.

City of London Maternity Hospital, City-road, E.C.—Res. M.O. £100.

Cotford, Taunton, Somerset and Bath Asylum.—Asst. M.O. £300.
Deptford, Metropolitan Borough.—Asst. M.O.H. £400.
Dumfries and Galloway Royal Infirmary.—Res. H.S. £150.
Elizabeth Garrett Anderson Hospital, Euston road, N.W.—H.P., Obstet. Asst., Two H.S. £50. Also Clin. Assts.
Flintshire Education Committee.—Asst. M.O. £450.
General Lying-in Hospital, York-road, Lambeth.—Registrar.
Gravesend Hospital.—H.S.
Great Northern Central Hospital, Holloway-road, N.—Hon. Anæsth.
Hampstead General and North-West London Hospital, Haverstock-Hill, N.W.—H.P. and H.S. £100.
Hull Royal Infirmary.—Cas. H.S. £150.
Jarrow Borough.—M.O.H. £750.
Leicester Royal Infirmary.—Hon. P.; Two Hon. Asst. P.; and Hon. Asst. S.
Lincolnshire, Lindsey County Council.—Asst. County M.O.H.'s £450. Also Dentists. £350.
Liverpool Royal Infirmary.—Three Hon. Asst. Physicians and Ophth. Surgeon.
Lochgilphead, Argyllshire, Argyll and Bute District Asylum.—Asst. M.O. £250.
London County Council.—Organisers Phys. Education. £600.
London Hospital, E.—Obstetric Registrar and Tutor.
Maidstone, Kent County Asylum.—Jun. Asst. M.O. £250.
Manchester, Hulme Dispensary.—Hon. S.
Manchester Royal Infirmary.—Hon Dental S.
Manchester Union.—Res. Asst. M.O.'s. £300.
Margate, Royal Sea Bathing Hospital for Surgical Tuberculosis.—Res. Surg. £200.
Middleton-in-Wharfedale Sanatorium, near Ilkley.—Med. Supt. £450.
Norwich, Norfolk and Norwich Hospital.—Asst. Hon. S.
Oldham County Borough.—Asst. School M.O. £350.
Paddington Green Children's Hospital, Paddington Green, W.—Honorary Physicians, Surgeons, and Dental Surgeon.
Plymouth, South Devon and East Cornwall Hospital.—Physicians, Surgeons, Asst. Physician and Med. Registrar, Asst. Surgeons, Pathologist, Anæsthetists, Surg. Dentist.
Queen Mary's Hospital for the East End, Stratford, E.—Res. M.O.
Reading, Royal Berkshire Hospital.—Hon. S. Also Sen. Res. M.O. £350.
Royal Chest Hospital, City-road, E.C.—H.P. £120. Also Res. M.O. £200.
St. Andrew's Hospital, Dollis Hill, London, N.W.—Res. M.O. £80.
St. George's Hospital, S.W.—Res. Anæsth.
St. Helena.—Asst. to Colonial Surgeon. £350.
St. Pancras Dispensary, 39, Oakley-square, N.W.—Hon. P. Also R.M.O. £200.
St. Thomas's Hospital, London, S.E.—Physicians, Surgeons, and Asst. Physician. Also M.O.
Salop County Council.—Medical Inspection and Treatment of School Children, Maternity and Child Welfare. Six Appointments. £450.
Serbia, Hospital in.—S.
Sheffield, East End Branch of the Children's Hospital.—H.S. £150.
Sheffield Royal Infirmary.—H.S. £150. Also H.S. for Ear, Nose, and Throat. £150.
Southampton County Borough.—Female Asst. M.O. £400.
Southampton, Free Eye Hospital.—H.S. £150.
Taunton Borough.—M.O.H. and School M.O. £500.
Torquay, Torbay Hospital.—R.M.O. £200.
Trinidad and Tobago.—Supernumerary M.O.'s. £250.
University College Hospital Tuberculosis Dispensary, Gower-st., W.C.—Tuberc. O. £200.
Ventnor, Isle of Wight, Royal National Hospital for Consumption and Diseases of the Chest.—Two Asst. Res. M.O. £200.
Warford, Alderley Edge, Cheshire, David Lewis Epileptic Colony.—Asst. Director. £400.
Western General Dispensary, Marylebone-road, N.W.—Hon. Ophth. S.
Westmorland Sanatorium for Consumption, Meathop, Grange-over-Sands.—Second Asst. M.O. £250.
Wigan Infirmary.—Hon. Pathologist and Bacteriologist.
York Dispensary.—R.M.O. £250.
Yorkshire, North Riding.—County M.O. £850.

Births, Marriages, and Deaths.

BIRTHS.

BAEZA.—On May 8th, at Ealing, the wife of Captain J. Baeza, M.B., King's African Rifles, of a son.
BLOOD.—On May 7th, at Bristol, the wife of Dr. B. N. Blood, of a daughter.
SEYMOUR.—On April 30th, at Osnaburgh-terrace, N.W., the wife of Major F. R. Seymour, late R.A.M.C., of twin daughters.
WHITE.—On May 10th, at 1, Albemarle-road, Withington, Manchester, the wife of C. Powell White, M.D., F.R.C.S.—a son.

MARRIAGES.

HARRISON—RACKHAM.—On May 6th, at St. Jude-on-the-Hill, Golders Green, Captain Cyril E. Harrison, R.A.M.C., to Muriel Constance, younger daughter of Dr. and Mrs. A. R. Rackham, of Elham, Norfolk.
HUMPHRY—HORNER.—On May 8th, at St. Mary's Parish Church, Stockport, Major Robert Ernest Humphry, R.A.M.C.(T.F.), to May, second daughter of Mr. and Mrs. James Horner, of Stockport.

DEATHS.

LEA.—On May 8th, at Camberley, Charles Edgar Lea, M.D., aged 37.
STURDY.—On May 1st, at the Colaba Hospital, Bombay, of dysentery, while on active service, Arthur Carlile Sturdy, M.C., F.R.C.S. Eng., Temporary Captain, R.A.M.C., aged 36.

N.B.—A fee of 5s. is charged for the insertion of Notices of Births, Marriages, and Deaths.

"THE LANCET" OF JAN. 11TH, FEB. 1ST, MARCH 8TH AND 15TH.

THE Manager is much obliged to those readers who returned to him their copies of the above issues, and regrets that in some three or four instances it was not possible to establish the identity of the senders, and to forward acknowledgements, as was done in all other cases.

Medical Diary for the ensuing Week.

SOCIETIES.

ROYAL SOCIETY, Burlington House, London, W.
THURSDAY, May 22nd.—Papers:—Prof. W. J. Sollas: On the Structure of Lysorophus as exposed by Serial Sections.—Mr. O. Rosenheim: A Preliminary Study of the Energy Expenditure and Food Requirements of Women Workers (communicated by Prof. E. H. Starling).—Mr. M. Greenwood, Mr. C. Hodson and Mr. A. E. Tebb: Report on the Metabolism of Female Munition Workers (communicated by Prof. E. H. Starling).

ROYAL SOCIETY OF MEDICINE, 1, Wimpole-street, W.
Tuesday, May 20th.
GENERAL MEETING OF FELLOWS: at 5 P.M.
Ballot for Election to Fellowship. (Names already circulated.)
Wednesday, May 21st.
SOCIAL EVENING: at 8.30 P.M.
Conversation in Library, light refreshment and smoking.
At 9.15 P.M., Mr. Jonathan Hutchinson: Art and Morality. (Illustrated.)
All Medical Officers, including Allies, are cordially invited.
MEETINGS OF SECTIONS.
Tuesday, May 20th.
PSYCHIATRY (Hon. Secretaries—Bernard Hart, G. F. Barham): at 5 P.M.
Annual Meeting.—Election of Officers and Council for 1919-1920.
Wednesday, May 21st.
HISTORY OF MEDICINE (Hon. Secretaries—Charles Singer, Arnold Chaplin): at 5 P.M.
Papers:
Mr. W. F. Smith: Rabelais, his Books and Life.
Professor Wright: The Medical Aspects of the Writings of Rabelais.
Friday, May 23rd.
STUDY OF DISEASE IN CHILDREN (Hon. Secretaries—G. E. C. Pritchard, H. C. Cameron, C. P. Lapage): at 4.30 P.M.
Annual Meeting.—Election of Officers and Council for 1919-1920.
Cases will be shown.

The Royal Society of Medicine keeps open house for medical officers of all the Allied Forces, and invites them to make free use of its library and rooms. The Emergency Post Graduate Scheme, under the charge of the "Fellowship of Medicine" is also open to all medical officers. Particulars of this will be supplied by the Secretary, Fellowship of Medicine, 1, Wimpole-street, London, W. 1.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

LONDON HOSPITAL MEDICAL COLLEGE.
A Special Course of Instruction in the Surgical Dyspepsias will be given at the Hospital by Mr. A. J. Walton. Lectures, given in the Clinical Theatre:—
MONDAY, May 19th.—1 P.M., Lecture XX.:—Symptoms, Complications and Treatment of Gall Stones.
FRIDAY.—10 A.M., Lecture XXI.:—Symptoms, Complications and Treatment of Gall Stones.

HOSPITAL FOR CONSUMPTION AND DISEASES OF THE CHEST, Brompton, S.W.
WEDNESDAY, May 21st.—4.30 P.M., Lecture:—Dr. Hartley: The Morbid Anatomy of Pulmonary Tuberculosis.

ROYAL INSTITUTION OF GREAT BRITAIN, Albemarle-street, Piccadilly, W.
TUESDAY, May 20th.—3 P.M., Lecture IV.:—Prof. A. Keith: British Ethnology—The People of Ireland.

BOOKS, ETC., RECEIVED.

APPLETON, D., AND CO., London and New York.
A Surgeon in Arms. By Capt. R. J. Manion, M.C., C.A.M.C. Pp. 310. 6s. 6d.

ARNOLD, EDWARD, London.
Text-book of Physiology. By Martin Flack, M.B., and Leonard Hill, M.B. Pp. 300. 25s.

BAILLIÈRE, TINDALL, AND COX, London.
Aids to Histology. By A. Goodall, M.D. 2nd ed. Pp. 136. 3s.

BELL, G., AND SONS, London.
Inorganic Chemistry. By J. Walker, F.R.S. 11th ed. Pp. 327. 5s.

BUTTERWORTH AND CO., London, India, Canada, and Australia.
Eyes Right. By J. M. Macphail, M.D. 2nd ed. Pp. 76. Rupee 1.

CHAPMAN AND HALL, London. JOHN WILEY, New York.
Animal Parasites and Human Disease. By A. C. Chandler, M.S. Pp. 570. 21s.

Notes, Short Comments, and Answers to Correspondents.

LARREY AND WAR SURGERY.[1]

BY WALTER G. SPENCER, M.B., M.S., F.R.C.S.,
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PART I.

"Ez fer war, I call it murder—
There you hev it plain an' flat."
(Lowell's Bigelow Papers.)

As one of the honorary librarians of the society I take this opportunity of attracting attention to the writings of Domenique Larrey, not only on account of their historical and antiquarian interest, but because they relate experiences similar in numberless respects to incidents which have occurred in the war through which we have just passed. Moreover, Larrey was the first systematically to develop in the field a surgical treatment for the man immediately upon his wounding. The wounds caused by the old musket bullet fired at close quarters set up injuries which have been reproduced by shrapnel and deformed rifle and machine-gun bullets. Distant firing then caused contusions more or less extensive or merely simple fractures, and the combination of burns and shock with wounds was restricted to fighting on board ship and the explosion of mines in sieges. Conditions in young and exhausted conscripts which would now be classed under the heading of war neuroses were often referred to by Larrey, who was the first—himself possessed of the highest surgical skill and knowledge, along with a zealous enthusiasm—to prepare an equipment which, placed close up to the fighting line, enabled him to practise life-saving operations. The lives of the men of his time are known, and Larrey, as demonstrated by his writings and by the testimony of others, yields to none in worth. Napoleon, in his will, called him "*le plus vertueux qui j'aie connu.*" He was a Republican at heart, to whom the wars of the Revolution and of the Consulate were wars of liberation and of defence; to him the Emperor remained General Bonaparte, the First Consul.

Larrey's Life and Publications.

Domenique Jean Larrey was born in 1766, at the village of Beaudéan on the upper Adour and on the northern aspect of the Pyrenees. At the age of 14 he went on foot to his uncle, Alexis Larrey, who was surgeon to the hospital at Toulouse, and from the first attended the hospital, where at the age of 15 he was appointed dresser (*sous aide*) and after that house surgeon (*aide major*). In 1787, at the age of 21, furnished with letters of introduction, he started to walk to Paris, alongside a slow-moving wagon. Larrey was a typical southern Frenchman, short, round-headed, dark, with a ruddy face, stoutly built, a first-class marcher, impervious to fatigue. His good circulation enabled him to hold instruments in his hands at Eylau, when the cold prevented others. He had a southerner's accent, was at once hasty in speech and kindly in action, voluble and plain-spoken in argument, but with abundance of practical common-sense.

During the time of Larrey's residence in Paris the whole of medical teaching was thrown into confusion by the Revolution. What he learnt was mainly by observation. From the practice of Desault, at the Hôtel Dieu, he acquired the method of amputation by three circular cuts. Desault taught that the margins of wounds might be pared and sutured. Larrey found that that could be done in the dry air of Egypt and Syria, but everywhere else he came to reject the suture of wounds, except those on the face. Larrey was throughout an enthusiastic teacher of applied anatomy. On every possible occasion, in the intervals of work for the wounded, he gathered together the poorly taught medical officers under him for instruction in dissecting, operative surgery on the cadaver, and practical surgery. He even extended this instruction to the medical officers of the conquered armies.

In April, 1792, Larrey was appointed surgeon major in the Army of the Rhine and commenced his practice of immediate amputation and the formation of his flying ambulance. In May, 1794, he was transferred to Toulon and in November sent to the Army invading Catalonia, where he had experience of the results of mine explosions. In February, 1796, he was called to Paris to be professor of anatomy and of operative and clinical surgery at the Val-de-Grâce Hospital. In 1798 came the expedition to Egypt with Larrey as chief surgeon, the advance into Syria took place in the spring of 1799, and Bonaparte returned to France in the autumn. Larrey elected to stay with the wounded, so that he did not return to France until November, 1801, when he resumed his duties at the Val-de-Grâce and was also surgeon to the Invalides. Early in 1805 he was called upon to arrange ambulances for the Grand Army collecting on the shores of the Channel, and as chief surgeon to the Imperial Guard he started at the end of August on the march to the Danube. The campaign terminated with the victory of Friedland on June 14th, 1807, and he got back to Paris in the following October. The Spanish campaign opened in February, 1808, and he was in Spain for a year. In March, 1809 he passed to the second Austrian campaign, after which he had leisure for two years and a half, and published the first three volumes of his "Mémoires de Chirurgie Militaire et Campagnes."

In February, 1812, Larrey left for Germany as surgeon-in-chief of the Grand Army. He took part in the advance to Moscow and the retreat. The campaign in France followed and ended with Napoleon's first abdication on April 7th. With the fall of the Empire Larrey lost all his appointments. He had to start private practice among the Republicans and Imperialists whilst excluded from the Court Circle. But in 1818 he was restored to his position at the Invalides and to a pension of 3000 francs. The fourth volume of his "Campagnes" was published in 1817, and he describes his experiences from the Russian campaign to Waterloo.

In 1821 he published a collection of his reports, "Recueil de Mémoires de Chirurgie, 1821," and in 1826 he visited this country, including the hospitals and museums in Dublin, Glasgow, Edinburgh, and London. The first three volumes of his "Clinique Chirurgicale" appeared in 1829. He retired in 1838, but on Dec. 14th, 1840, erect and fresh-looking, in the uniform of the Imperial Guard he had worn at Wagram, he followed the remains of Napoleon to the Invalides. His final publication was his "Relation Médicale de Campagnes et Voyages de 1815 à 1840-1841."

Immediate Amputation.

I give special prominence to Larrey's practice of immediate amputation because it was the essential life-saving operation under the conditions in which he worked. Larrey's method of amputating consisted in removing the limb by a triple circular incision and by the ligature of the arteries and veins, without including nerves, and without entailing further hæmorrhage, the advantage of which over flap amputation was that sutures were unnecessary.

Amputation immediately after the injury—often within a few minutes to an hour of the injury—originated with English naval surgeons in the seventeenth century, and is first plainly described by Wiseman in 1676.[2] Immediate amputation became the general practice in the British Navy during the eighteenth century. But this was not the case with military surgeons, especially in France. There was one important surgeon, however, whose statements were based on actual experience. Except for Le Dran,[3] all important French surgeons of the eighteenth century recommended delay, but then they had either had no practical experience of gunshot wounds or of amputations except after delay. At the battle of Fontenoy both French and English each lost 7000 killed and wounded. Faure said that 300 amputations were done after the battle, of whom only about 30 survived. Of these latter he selected for commendation 10 which had been done late. Larrey, criticising Faure's cases, said that 4 should have been amputated at once, and that as for the remaining 6, amputation might have been avoided by better treatment from the first.[4]

(To be continued.)

[1] An address given to military medical officers at the Royal Society of Medicine and here published in an abridged form.

[2] Wiseman: Chirurgical Treatises, 1676, pp. 451 and 420.

[3] Traité ou Reflexions tirées de la Pratique sur les Playes d'Armes à Feu, Vme Partie, Réceptes et Aphorismes tirés de l'Expérience, 1737, p. 1.

[4] Mém. sur les Amputations, "Campagnes," ii., 451.

THE NEED FOR PHYSICAL EDUCATION.

To the Editor of THE LANCET.

SIR,—In the course of the reconstruction and the educational reorganisation which is bound to be a result of the war, it is devoutly to be hoped that the crying need of the rising generation for physical education will not be overlooked. I think most medical men who have been brought into individual contact during the war with large numbers of our troops from various units, and almost all districts, must have been amazed at the low average of their physique. Of course, there have been among the numbers that have passed through our hands many fine specimens, but they have only served to accentuate the general lowness of the standard. It is not merely a question of height and weight, but a general poverty of muscular development, and quite commonly an apparent lack of all muscular tone.

Since I have been out in this country and seen a good deal of the troops of other nationalities—American, French, and Russian—and had an opportunity of comparing them with

our own, I have been forced to the conclusion that in these days our countrymen would take a very lowly place in any classification of the nations according to physique. Now it is fairly certain that this was not the case until comparatively recent years; all evidence tends to show that up to at any rate a century ago our general standard was rather above than below the general European standard. The question therefore arises to what is this deterioration, or possibly comparative deterioration, due? In large part, no doubt, to the excessive town-dwelling tendency of the modern Briton, but I think it is certainly partly due to an actual improvement in physique in many other nations caused by the adoption of universal military service and accompanying compulsory physical training.

We have contented ourselves with relying on games to achieve physical fitness. Unfortunately, the event has proved that a national devotion to outdoor games tends rather to produce a nation of spectators than players, and therefore benefits only those who stand least in need of such benefit—those endowed by nature with a good physique. I suggest to you, Sir, that it is of vital importance to the future of our country that serious attention should be paid to the improvement and development of the physical standard of the people, especially of the rising generation, and that it is pre-eminently the business and the duty of the medical profession to carry on a steady campaign in favour of systematic compulsory physical training in the schools—and afterwards, for that large section of our population which leaves school life early.

I am, Sir, yours faithfully,

E. W. DEWEY,

North Russia, N.R.E.F., Feb. 28th, 1919. Lieutenant, R.A.M.C.

NEW PATTERN GLAND DISSECTOR.

I HAVE designed the surgical instrument shown below as a dissector in gland operations and in regions where a surgeon cannot safely use a knife. Each end is for use according as

a straight or a curved blunt instrument is required. I have found it most serviceable in my operative work. Messrs Arnold and Sons, London, are the makers of the instrument.

Eastbourne. JAMES ADAMS, F.R.C.S.

BLIND MEN ON COMMITTEES.

AT a recent conference in Leeds of representatives of local authorities and other persons interested in the welfare of the blind in the North-East Division of the West Riding of Yorkshire Mr. William Harvey, who presided, estimated that there was a blind population in the district of 465, of which the majority was to be found in the Leeds area where workshops had been long carried on, and a complete system of visitation existed. The Leeds Education Committee had provided facilities for educating the blind in special schools. It was proposed to form a district committee consisting of one representative each from the West Riding Education Committee, the Leeds Education Committee, the Yorkshire Vagrancy Committee, and the several boards of guardians in the district, the Leeds Institution for the Blind and Deaf and Dumb, and the Leeds Branch of the National League of the Blind. On the proposal of a blind delegate present it was agreed that blind people should comprise one-third of the membership of the committee. A resolution was passed urging the Government to expedite the payment of grants towards the care of the blind.

THE CLAXTON EAR-CAP.

To the Editor of THE LANCET.

SIR,—In May, 1899, there used to be an ear-cap sold by one H. C. Claxton, of 62, Strand. Could you or any of your readers let me know as to whether or not it is possible to get the ear-cap anywhere now, as Claxton seems to have moved from 62, Strand?—I am, Sir, yours faithfully,

May 8th, 1919. W. A.

IMPERIAL ANTARCTIC EXPEDITION.

AT the Eighth International Geographical Congress held at New York in 1904 a resolution was passed urging the need of further completing the systematic exploration of the polar areas. Since that year there have been no less than seven important polar expeditions, including two under Sir Ernest Shackleton, and a great deal of valuable research work has been carried out in the antarctic regions. But the exploration of polar areas is by no means completed. It is now proposed to send another expedition to the South Pole which will have as its double object the continuation of research work already undertaken, especially in the important branch of meteorology, and the economic development of the antarctic regions. The expedition will be led by Mr. J. L. Cope, B.A., who accompanied Sir Ernest Shackleton's expedition in 1914–16, and will be armed with some original equipment, including an aeroplane and specially prepared portable huts. Headquarters are to be established at New Harbour in December, 1920, and here accommodation is to be provided for 22 men, who are expecting to continue research work until 1925. The expedition hopes to be able to present a complete set of scientific specimens both to the British Museum and to the University of Cambridge.

WANTED, A HOME.

To the Editor of THE LANCET.

SIR,—Is there any home where a blind gentleman, aged 50–60, could be received? He could contribute about 25*s.* per week. He is active and healthy in mind and body, bright, energetic, well-informed, sociable, companionable, has organising capacity, and is a good walker. He has lived in a South Devon village for over 20 years, and it is hoped he may return, as locality is much to the blind, but for the present after-war conditions are making matters very difficult.

I am, Sir, yours faithfully,

May 6th, 1919. M.D.

A NEW REFLEX.

WE have received from Professor Piero Boveri, Major, Italian Medical Corps, director of the 1st Section of the Neurological Military Central Hospital, Milan, an account of a pathological reflex of the great toe which has lately been observed by him. In sick or wounded persons an absence of the normal Achilles tendon reflex has often been noted, whilst percussion sometimes provokes a flexion of the second phalanx of the great toe, a result never seen in healthy persons. This abnormal reflex has been found in lesions of the spinal cord, lesions of the spinal roots, and lesions of the sciatic nerve; it is also found in Little's disease and Pott's disease. The reflex occurs in partial lesions of the great sciatic or external popliteal, being absent when the lesion is complete. In spinal lesions the reflex affords us information as to the localisation and extent of the disease. Professor Boveri considers that the response to the external stimulus is returned along the deep-seated nerves and long flexors of the big toe, on account of the interruption of the efferent path of the reflex arc, which normally runs in the superficial nerves and muscles.

R. K. H.—The subject is discussed at varying lengths in all systems of surgery and monographs on malignant disease. It is quite impossible to convey in the form of an answer to a general question any information that would be useful.

Communications, Letters, &c., to the Editor have been received from—

A.—Mr. R. J. Albery, Lond.
B.—Dr. A. F. Bill, Nayland; Board of Agriculture and Fisheries, Lond.; Col. R. J. Blackham, C.M.G., C.I.E., A.M.S.; Messrs. P. Blakiston's Son and Co., Philadelphia; Sir J. Bland-Sutton, Lond.; Surg.-Comm. W. Bastian, R.N.
C.—Mr. J. F. Colyer, Lond.; Dr. F. G. Crookshank, Lond.; Mr. B. Clarke, Lond.; Dr. A. Compton, Lond.; Col. S. L. Cummins, C.M.G., A.M.S.; Dr. J. B. Christopherson, Khartoum; Mr. G. Cockerill, M.P., Lond.; Dr. L. Colebrook, Lond.; Chicago School of Sanitary Instruction; Major H. L. Cronk, R.A.M.C.; Cremation Society of England, Lond., Sec of.
D.—Department of Scientific and Industrial Research, Lond.
E.—Dr. C. Engelbreth, Lond.; Mr. A. L. Elwood, Lond.
F.—Fight the Famine Council, Lond., Hon. Sec. of; Miss M. Fitz Gerald, Manchester; Capt. H. J. B. Fry, R.A.M.C.(T.)
G.—Dr. W. Grant, Gartly; Mrs. Lloyd George, Lond.; Prof. G. Galli, Rome; Col. G. E. Gask, D.S.O., A.M.S.
H.—Dr. W. J. Hadley, Lond.; Dr. C. W. Hutt, Dudley.
I.—Imperial War Relief Fund, Lond.; Inspectors of Lunatics (Ireland), Dublin.
K.—Surg.-Lieut.-Comm. W. H. King, R.N.; Major T. W. G. Kelly, R.A.M.C.(T.)
L.—Mr. W. Lyne, Lond.; Mr. R. W. Lamont, Southport.
M.—Mr. J. S. Milne, Swalwell-on-Tyne; Capt. W. P. Morgan, R.A.M.C.; Lieut. H. K. Mason; Mr. A. Moorhouse, Bradford; Lieut.-Col. A. Miller, I.M.S., Madras
N.—North-Western Tuberculosis Society, Wigan, Hon. Sec. of; Major C. Noon, R.A.M.C.
O.—Sir W. Osler, Bart., Oxford; Mr. H. C. Orrin, Lond.; Mr. J. Offord, Lond.
P.—Mr. R. H. A. Plimmer, Lond.; Lieut.-Col. T. H. Pope, I.M.S. (retd.), Margate; Dr. E. E. Prest, Glenafton.
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S.—Dr. P. Smith, Sirhowy; Dr. A. G. Shera, Sheffield; Societe de Biologie, Paris; Mr. T. S. P. Strangeways, Cambridge; Prof. Dott. N. Samaja, Bologna; Mr. S. Simmons, Warwick; Messrs. James Smith, Lond.
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W.—Mr. R. Warren, Lond.; Dr. J. P. Williams, Gorleston-on-Sea; Dr. G. Ward, Sevenoaks.

Communications relating to editorial business should be addressed exclusively to the Editor of THE LANCET, 423, Strand, London, W.C. 2.